A MANUAL OF TEACHING

THE PRACTICAL TEACHER

VOL. VIII. '84 TO '85

EDITED BY

FRANCIS W. PARKER

icles on the

THE

PRACTICAL TEACHER.

VOLUME VIII.

1884-85.

FRANCIS W. PARKER, Editor.

Contains all of Payne's VISIT TO GERMAN SCHOOLS, and Practical Articles on the Common Branches; on Psychology and Pedagogy,

MAKING IT A MANUAL OF TEACHING.

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Honest investigation and a courageous application of the truth when found.

BEGINNINGS.

Work is the greatest means of education. To train children to work, to work systematically, to love work, and to put their brains into work, may be called the end and aim of schools. In education, no work should be done for the sake of the thing done, but for the sake of the growing mind. Of course this applies to teaching and teachers, not to pupils. The schoolroom should be filled with the atmosphere of work. Work to be genuine must be upon real things, not always concrete objects, to be sure, but always upon objects of thought. Word-learning is not real work, but drudgery. Give pupils something to do the moment you enter the school, or better, do something well yourself. If you would put your best side forward, do the best piece of technical work in your power; but do not do it in an ostentatious way; do it as if it were your habit. Children's keen eyes pierce shams with unerring accuracy, but they almost worship power to do things well. If you read well, read your best; if you sing, sing and lead your pupils. A sketch on the blackboard, good penmanship, good anything, will attract and keep your pupils from the main question—which is: how they can manage you. Spend no time the first day in taking names, examining books, giving out lessons, waiting for the purchase of books, but set every pupil at work at once—writing, drawing, ciphering, molding, rather than book study. If the school is new to you, weeks should be spent in the most careful and thorough examination. When you take names, make it an examination in writing and composition. Distribute slips of paper; write the formula on the board, that is: Name? Age? "Where do you live?" "How long have you attended school?" "Where have you been to school?" "Who were your teachers?" "What have you studied?" "What study do you like best?" Pupils will generally give you a pretty fair photograph of their mental condition in answering these questions. Have you little ones just entering school for the first time, do not allow them to dangle their feet idly for one moment. Give them a piece of chalk and send them to the blackboard; set them to building with blocks on their desks or on the block-table; to working sand at the sand-table; to marking on their slates; to weaving splints, folding paper, molding clay—anything and everything to get and keep their hands busy. Supposing a little one should object, through timidity; then wait for him, but put the work before him. Have no lecturing, no fulsome talking, but go straight to work. Half the real disorder in school springs from a desire to do something. If there is plenty of work, order will take care of itself. What is order? Order is the means of limiting energy to work. Real order fills the child's consciousness with the right things, and right things keep out the wrong. But supposing my children rebel—what then? They rebel because they see a weakness in you, a lack of courage, of tact, or of skill. True courage is quiet, low-voiced, and full of tact. Tact avoids, plans and executes flank movements, looks on malice with a quiet smile, meets obstinacy with a pity for weakness. But supposing a boy rebels? The slightest shrinking, the least loss of nerve, a spurt of anger gives him the victory. Shall I punish with the rod? There are many worse things than the rod. Threatening is worse; rewards are worse; sending home is generally worse; scolding is worse. "Shall I punish?" In order to advise, I must diagnose the case. You may be obliged to use the rod, but in ninety-nine cases out of a hundred the causes of punishment are to be found in some weakness of the teacher.

Be cheerful—yes, happy. A smiling face, the manifestation of a warm, loving heart, goes a great ways. An old schoolmaster said that when he found himself cross, he sat down in his chair and laughed heartily.

Play with your pupils, ball, croquet, or hide and seek—no loss of dignity to a really dignified

teacher, but if your stock of dignity is small, you may be overpowered. As much may be taught on the play-ground as in the school-room.

Do not try to do too much the first day. The minds of children have had a rest; do not wake them up too quickly. Physical exercises, a drill in gymnastics, will soften the return from the vigorous vacation play to quiet work.

Go very slowly; the first thing to find out is where to begin. This can be done only by the most careful examinations, covering weeks and even months.

READING.

LAWS AND PRINCIPLES FOR STUDY.

READING IS GETTING THOUGHT by means of written or printed words arranged in sentences; or reading is thinking by means of words.

READING IS NOT TALKING, but talking (speech) is a very important means of learning to read. A child when he enters school has been learning to talk for five or six years. He has mastered, in a degree, articulation, enunciation, accent, pronunciation, pauses, inflection, emphasis, melody and harmony. In the five latter elements of speech he is the model for teachers of elocution. In these he can be taught nothing so far as practice is concerned. If he have defects in pronunciation or articulation—try exercises in talking or articulation, *per se*, and not in reading lessons.

ORAL READING HAS THREE USES in teaching reading. First, the oral expression of thought (oral reading or talking) makes thinking (getting thought) a necessity. Second, the expression of thought is always compared by the thinker with the thought itself. Third, by oral reading the teacher can know whether the thought is in the pupil's mind, and just what defect, if any, there is in the pupil's thinking. Making oral expression the end and aim of reading lessons is a radical error; making it the means of thought evolution is the true purpose. The importance of this discrimination cannot be exaggerated.

THE PROCESS OF LEARNING consists in learning a vocabulary of written or printed words. A word has but one use, and that is to recall its appropriate idea. A word is learned when it will instantly, at sight, recall its appropriate idea, in any idiom known to the reader.

WHEN TWO IDEAS OR THINGS come together in the same act of consciousness, or follow each other in immediate succession, thereafter the reappearance of either one of the two ideas or things has a *tendency* to bring into consciousness the other idea or thing. This is one of the laws of association, and under this law all words are learned.

THE METHOD OF TEACHING READING consists *entirely* in bringing about acts of association under this law between *ideas already in the mind* and written or printed words. Every word is learned by one or more acts of association. The number of acts of association depends upon the emotional stimulus of each separate act.

IN THE DISCOVERY OF THE METHOD of teaching reading there is, if the above premises be true, the following infallible guide: All means that directly aid in acts of association should be used in teaching reading; all means that do not directly aid in such acts should not be used, as they occupy time uselessly, or directly hinder the proper mental action. The means used should be adapted to stages of development or acquired power. One means may be a hindrance at one time and a help at another. The following devices have been discovered as helps to acts of association, if used in the proper way and at the proper stages of growth.

TO BRING THE IDEA INTO CONSCIOUSNESS.

Objects.
Drawing by teacher.
Drawing by children.
Pictures.
Oral word.
Conversations.
Stories.
The oral sentence.

TO BRING THE WORD INTO CONSCIOUSNESS.

The written or printed word as a whole.
Writing the word from copy.
The written sentence as a whole.
The oral word.
The parts of the oral word, *i. e.*, Articulation, Phonics.
Definitions.
Derivations.
Synonyms.

THE BLACKBOARD IS PREFERABLE TO CHARTS OR BOOKS in the first steps, for the following reasons:

1. The words and sentences made by the teacher's hand correspond to making of words by the vocal organs.

2. The attention of children is more easily held by one word or sentence, than by words and sentences in a chart or printed page. Compared with the use of books, at first, it is much easier to interest a group of little ones upon one sentence, written in a large hand, than to confine the attention of each child to his own book.

3. The repetitions necessary for the learning of most words, cannot be found in any one, or even a half dozen, books; these repetitions can easily be made on the blackboard.

THE ARGUMENTS IN FAVOR OF USING SCRIPT alone in the first steps are:

1. It is as easily if not more easily learned than print.

2. It is made much more easily by the teacher than print.

3. By copying the written word or sentence the child not only fixes the form of the word in his mind, but makes the word in the same form that he will make it all his life.

4. By writing, the first step is taken in mastering the second great means of thought expression by language. Each means of thought expression has its peculiar and indispensable influence upon thought evolution. Thus the child in gaining the power of written expression at an early age, gains with it a new power of thinking.

5. Copying words and sentences is the best, and indeed the only, way of beginning to learn spelling.

6. It fills up a great portion of time with excellent, busy work.

7. The change from script to print, when some one hundred to two hundred words have been learned, can be easily accomplished in one or two days.

THE REASONS WHY PRINT NEED NOT BE USED at first, are:

1. Print is rarely used in practical life in making words.

2. It does not at first in any way aid learning to read.

3. Two sets of forms, script and print, are confusing to the child. They take more time.

4. The easy change from script to print renders the early use of the latter totally unnecessary.

THE VOCABULARY FOR BLACKBOARD WORDS should be very carefully selected. It is a great mistake to use words at random. A great number of repetitions are generally necessary to learn words; if the teacher does not follow a definite vocabulary, words may be used a few times and then dropped before they are half learned. While the vocabulary should not be followed word by word as laid down, still the teacher should know exactly every word her pupils are learning or have learned. The vocabulary should be taken from charts and the first parts of primers or first readers that pupils will read when they take print.

THE FOLLOWING VOCABULARY has been carefully selected in this way. Teachers who use it should examine the first parts of the readers they intend to use and add the words not in this list:

ă	has	went	Willy	Tommy	young
fan	lamp	neck	silly	sorry	hunt
man	damp	fence	pretty	was	funny
pan	Tab	Emma	give	what	humble
Dan	candy	seven	live		enough
ran	apple	them	six	ŭ	hurry
can	wagon	crept	fix	new	
an	Fanny	held	swim	you	ā
cap	Abby	lend	him	your	slate
lap	carry	very	sing		skate
trap	habit		thing	à	Kate
strap	bang	ĭ	kitten	chair	ate
snap	shall	pin	milk	where	hay
nap	happy	fin	chicken	there	day
hat		tin	crib	scare	may
cat	ĕ	spin	picture	care	play
rat	sled	begin	lift		they
mat	bed	in	drink	ā	say
bat	bread	is	little	baa	way
pat	head	his	this	calf	away
flat	shed	rabbit	with		pail
fat	Fred	pit	if	ŭ	sail
that	fed	bit		gun	make
at	said	fit	ŏ	sun	take
flag	hen	hit	top	run	name
bag	pen	sit	shop	bun	came
rag	men	it	hop	fun	Jane
stag	ten	hill	stop	one	Mary
back	when	quill	pop	cup	Daisy
sack	then	Jill	dot	pup	mane
track	pet	Dill	spot	up	gave
jack	net	still	hot	jug	
black	velvet	rill	trot	mug	ē
quack	set	kill	tot	dug	be
ax	wet	will	got	nut	tree
wax	get	till	not	but	knee
Max	let	ship	dog	crumb	three
hand	yet	Jip	log	hum	he
sand	bell	tip	fog	some	me
band	tell	skip	ox	come	she
stand	sell	pig	box	bud	we
and	well	twig	fox	mud	the
plant	fell	dig	odd	jump	see
lamb	nest	big	John	bump	Lee
Sam	rest	chick	on	thump	flee
swam	blest	stick	Tom	must	free
am	Benny	lick	from	just	ear
bad	Jenny	pick	toss	bunny	hear
had	many	quick	cross	honey	year
glad	egg	kid	doll	tub	dear
candle	leg	lid	dolly	rub	near
handle	beg	hid	pond	duck	sweet
Frank	step	did	rock	chuck	beat
thank	Net	fish	lost	gull	eat
scratch	dress	dish	of	buzz	read
catch	yes	wish	off	love	feed
as	sent	piggy	robin	us	sheep

keep	five	four	small	through	yard
peep	drive	wore	horn	into	Carlo
please	ice	woke	morn	school	large
these	knife	broke	corn	Lucy	mamma
team	Fido	cold	caught		papa
seam	lion	old	warm	ow	
week	nine	goes	or	cow	er
feel	white	rose	for	bow	brother
leave	like	goat	paw	wow	sister
fifteen	kind		caw	now	mister
		ā		how	Walter
ī	ō	basket	û	house	water
fly	crow	grass	book	mouse	matter
sky	snow	dance	look	crown	sir
cry	tow	after	good	brown	flower
dry	flow	fast	wood	down	her
sly	go	last	put	out	Robert
try	no		wool	about	hurt
shy	hoe	â		hour	bird
my	row	draw	ô	our	girl
why	know	saw	to	âr	
by	yellow	all	do	are	oi
slide	so	call	who	arm	boy
hide	floor	fall	two	cart	toy

USE OF OBJECTS IN TEACHING WORDS AND SENTENCES. — Out of the vocabulary may be selected a list of words to be taught by means of objects, as, for example: fan, doll, hat, cap, rat, lamb, hen, bell, cat, egg, nest, bird, flower, flag, wagon, mat, fish, dish, rabbit, sled, sand, tin, pig, pen, pan, trap, bag, apple, pin, box, top, chair, cup, mug, duck, slate, tree, car, goat, cow, girl, boy, toy. The objects selected may be models or objects in miniature. Such objects as fan, doll, hat, cap, bell, mat, dish, sled, sand, etc., may be the real things. The objects should be kept out of sight of the children and presented one by one.

SUPPOSE A LITTLE GROUP of five or seven children has had the preparatory training in observation and language, and that all is in readiness for the first steps. The following is one way to give the first lessons:

SHOW THE OBJECT, and, with little or no conversation about it, write the word in a very large hand upon the board—A DOLL (always write the article "a" before the noun, and pronounce them one word). Put the doll upon a desk or table, and, pointing to the word, say, "Bring me a ——," the word *doll* to be indicated by pointing. The word may be erased and written again. It is a good device for the teacher to say, as she writes the word: "Did you ever hear the chalk talk? Listen!"

USE OF SCRIPT.—The first word taught upon the blackboard should be copied in script by pupils. There are several ways of taking the first steps:

1. Write the word very large on the board. The teacher traces the word, and pupils follow her, writing the word in the air. "Schreiben in der Luft," as the Germans call it.

2. Pupils trace the word on blackboard or slates.

3. Teacher guides the hand of a pupil with her own, helping as little as may be.

4. Pupils follow the teacher, on their slates, while she writes, line by line, on the board.

5. Pupils copy the word without any assistance from the teacher.

The same word may be copied a number of times. It is plain that if *rat* is the first word, the difficulty of copying *cat* has been much reduced.

A GOOD WAY TO RULE THE SLATES:

One line for height of one space letters, like i, n, m, etc.,—one line for three space letters, h, l, etc., and *no* line for two space letters, t, d.

THE BEST RESULT is effected by the best effort of the pupil, no matter how poor it may be in itself. Have pupils read everything they write, and lead them to think that they are *talking with their pencils* when they are writing. Never allow any careless work. Never allow any work of pupils to remain unnoticed—look at everything they do.

OBJECTS AGAIN.—From three to five minutes will suffice for the first lesson—one word is enough. Send the little ones to their seats when their curiosity is fully aroused, so they will look back longingly at the word, and wish to come out again. Introduce a new object with a new word in the third or fourth lesson in the same way as at first. Now you have two words and two objects. Write the words on the board—for instance, "a doll," "a fan." Point to one and ask, Who can bring me a ——? (pointing to *doll*). Who can bring a ——? (pointing to *fan*). Take one of the objects and say, "Tell me what this is on the board." "Tell me what that is" (taking the other). Erase words. "Now I will write (or *talk with the chalk*), and you may bring me what I say" (writing one of the words). Erase and write the other word—or better, write again the same word as at first.

"Now you may go to your seats and copy one of the words; raise your hands when done; I will come and look at it; if it is all right, I will bring you the object or you may get it." Two or three lessons may be profitably given with two words, then introduce a third and fourth, but *go very slowly*—a good appetite for the work is much better than a cloyed appetite brought about by a great number of words. "What do you suppose I am going to say with the chalk to-day? Where do you suppose it is? What does it look like? Can you find it?" Real eagerness and interest is easily imparted to children. After four or five words are taught, write "the doll," "the fan," "the cat," without calling the child's attention to the change, simply using "the" for "a," and thus reviewing all the words that have been taught.

MOST LESSONS SHOULD BEGIN WITH REVIEWS.—1. Write the words one by one and have pupils show the objects. 2. Show the objects and have pupils point to the words. 3. Point to the words and have pupils say what they mean. 4. Show two or more objects of the same kind, two fans, for instance, and write "the fans," "the dolls," etc. The next lesson will be upon teaching sentences.

GRAMMAR GRADES.—The question is often asked, how can pupils who have acquired a dreary, monotonous tone in oral reading be cured? The habit has been acquired by radically bad teaching, and it can never be fully cured in all children. One excellent remedy is found in dropping entirely oral reading for a time. Have pupils get the thought and give it in their own words. This exercise may be aided by questions.

THIS SELECTION is taken from page 136, Monroe's Advanced Third Reader:

"Just then a shrill whistle was heard, and out flew the steam; but as it went, it moved a rod, and the rod moved the wheels, and a long train of cars glided out of the station. On they dashed, faster and faster, until the smoky town was left in the distance, and houses, trees and fields flew by as if they all had wings.

"Curving round a hill, the train soon passed out of sight, leaving the steam far behind. A cloud which happened to be floating by at that moment, asked the steam to come and join it. So up went the steam and the two became friends at once, gliding on gently over fields, and brooks, and rivers, and they said they had never been so happy in all their lives."

QUESTIONS—(Pupils all intently getting the thought from the words)—"What was heard? When was the whistle heard? What kind of a whistle was it? What flew out? What did the steam do? What did the rod do? What happened then? What did the train do? What kind of a train was it? Out of what did the cars go? What did the cars do then? How did they dash? How long did they go? What kind of a town was it? Why? What flew by? Did they really fly by? How did they fly? When did the train pass out of sight? What did it leave? Where was the cloud? What did the cloud ask? When was it floating by? At what moment? What did the steam do? Who were the friends? What did the friends do? Where did they glide? What did they say?"

The questions should be asked rapidly in pleasant tones. *Pupils should never know who is to be asked the next question.* They should answer at once, in their own words, as they get the thought from the book, and usually in full sentences.

SUCH EXERCISES CAN BE MADE VERY INTERESTING if conducted with life and vigor. After twenty or more lessons like this, ask pupils, one by one, to close their books and tell one thing that they have read, then two things, and after power is thus gradually developed, the whole story. Pupils can be led in this manner to discriminate between the fresh, talking tones and a slow, monotonous drawl, so that when they are allowed to read orally, the question, What did you say? will bring them back to talking. This is one of many devices to remedy an evil that should never be allowed to exist.

LANGUAGE.

ORAL AND WRITTEN LANGUAGE COMPARED.

PRONUNCIATION IS MAKING WORDS with the vocal organs. Spelling is making the words with the hand and pen or pencil. Enunciation is the distinct utterance of oral words. Legible writing is the distinct utterance of written words. Articulation and the writing of separate letters are coordinates. Pauses in speech correspond to spaces between words and sentences, together with capitals at the beginning of sentences, and punctuation. The idioms or frame-work of sentences are the same in both methods of expression. There is no accent, inflection, nor emphasis in the written language, that may not be indicated typographically.

CO-ORDINATES.

Pronunciation.—Spelling less accent.
Enunciation.—Legible writing.
Articulation.—Making separate letters.
Pauses.—Space, capitals and punctuation.

The elements of oral expression not found in written expression are accent, inflection, emphasis, melody, harmony.

The idioms are identical.

THE CHILD WHEN HE ENTERS SCHOOL has learned the oral language, that is, he has learned some idioms; he has learned pronunciation, accent, inflection, emphasis, pauses, melody and harmony. All this power to talk has been acquired by the necessity of thought expression, stimulated by emotion, the resultant of thought. Idioms, pronunciation, enunciation, accent, are acquired by imitation. According to the pattern will be the formal elements of speech. All corrections in language must be made in precisely the same way that inaccuracies have been acquired, by imitation. Imitation that has not the direct stimulus of desire to express thought, is like the welding of cold, unheated iron, while that imitation which results in the imperative demand by thought for expression, is like the molding of a molten mass. All evolution of the oral language under the safe guidance of mother nature is the immediate result of thought-evolution. *The method by which every child learns the oral language should be in every particular the method by which he learns the written language.* The study of method in language-teaching is absolutely confined to the study of how children learn to talk. The method by which children have always acquired the power of oral expression should be continued in all further attempts to teach them the oral language. The inference is plain; go to the child for *the* method.

ALL WORK IN READING is essentially work in oral and written language. Spelling is begun by copying written words and sentences from the blackboard. This is "talking with the pencil," spelling, writing and reading in the same acts. Spelling is making the written forms of words, and writing is identical with spelling, that is, accurate writing. All spelling should be acquired directly under the stimulus of thought expression, just as pronunciation has been. Spelling is imitation, and under the immutable laws of imitation a child should not see an incorrect form. Of course it is impossible fully to apply this law, for accident is sure to furnish incorrect forms; but such need not be supplemented by the teacher, who should never show pupils wrong forms, or even call their attention to them when they do appear.

In the directions for teaching reading will be found suggestions for teaching spelling and written language.

RULES FOR TEACHING SPELLING ARE:

1. All spelling should be the direct expression of the pupil's thought.

2. Pupils should be trained from the first to exact imitation. They should never be allowed to see a word incorrectly spelled, or to spell one incorrectly.

3. Train pupils *to know when they do not know* how to spell a word. In the first steps have them ask for the word whose form they do not know, and then let the teacher or some pupil write it on the blackboard. When pupils can use a dictionary, have them find all words for themselves.

4. Give them plenty of thinking and thought expression, both oral and written. (These rules apply to all grades.)

ORAL SPELLING is not spelling; it is the oral description of a written word; it helps spelling, as oral descriptions help drawing and making. Most oral spelling is a terrible waste of time.

DICTATION.—I can easily imagine a high grade of skill in teaching written language that would require very little direct dictation. Dictation lacks the immediate healthy stimulus of the writer's own original thought. There is thought, to be sure, if the exercise is properly conducted, but the delight of direct origination is lacking. As teaching skill increases, necessity for much dictation will decrease. Just as soon as the child has the ability, have him copy sentences from the blackboard. There should be no copying from the book at first. After the work of copying sentences is well begun, there should be little or no copying of single words. Writing sentences involves capitalization and punctuation, and the rules given for spelling should be closely followed in these two elements of form. When pupils have a hundred or more words distinctly fixed in their minds, together with the written forms of sentences corresponding to their oral idioms, the work of dictation may safely be begun. *Absolute precision and correctness in copying should be the first point aained.*

FIRST STEPS IN DICTATION.—Write a simple sentence on the board; have pupils copy and read it. Erase, and have pupils erase. Then speak the sentence in perfectly natural tones *just once*. (Never speak a sentence more than once. The training of the ear to listen is primarily of greater importance than to train the eye to see printed words.) Have pupils write the sentence carefully. While they are writing, follow with your eyes so far as it is possible your pupils' work. If they make the slightest mistake, erase the work instantly or have them do so, and try it again. Preserve only that which is absolutely correct. One mistake in a sentence should be sufficient cause for leaving that sentence out, in marking, and all other considerations. This is strong doctrine, but if followed closely and persistently it will surely lead straight to the desired result, the automatic use of correct forms in written language.

"Such severity will discourage children," you say. By no means; children have an innate taste for precision until it is spoiled by negligent training. The delight of doing all things perfectly is one of the greatest charms of school work. Try it.

As in copying, all dictation or spelling should be by sentences. All spelling should follow and be limited to the range of the pupils' ideas and power to think. Devices for training pupils to talk with the pencil will follow in the next number of THE PRACTICAL TEACHER.

NUMBER AND ARITHMETIC.

It is my purpose to begin a very careful investigation of number and arithemetic with my new pupils, I mean those of the readers of THE TEACHER who would like to study with me. I will try to lead the investigation by asking questions, making suggestions and criticising answers.

QUESTIONS FOR ONE MONTH'S INVESTIGATION.

What are figures? What is the relation of figures to numbers? What is the difference between words and figures? In studying number what shall we study? What is the use of number? How can the truth of the following sentences be shown:

(1) $4 + 4 = 8$
(2) $8 - 4 = 4$
(3) $2 \times 4 = 8$ (to be read two fours are eight.)
(4) $8 \div 4 = 2$
(5) $\frac{1}{4}$ of $8 = 2$

How many objects does it take to show that all these sentences are true? What is the specific difference between showing the truth of the first and second sentences? (In describing exactly what you do, do not use any terms or words, if possible, that you have used before.) What is necessary to show that the second sentence is true? Is any "taking from" or "taking away" or "taking out of," necessary? The truth of which sentence can be seen the easiest? What do you do with the numbers of things to show that the second sentence is true? Show the truth of the third sentence. How does it differ from the first? From the second? Try to "take" *one* number a number of times. Show the result. Show a "unit in the other number." Prove that the fourth sentence is true. Show what the 8 represents in this sentence. What does the 4 represent? The 2? Which is of greater value the 2 or the 8? How much greater? Show the difference between the fourth and first sentence. The fourth and the second. The third. Show what the fifth sentence means. Show what the 8 represents. What the 2 represents. What do you do to find the value of the 2? Is the truth of the fourth sentence the same as the truth of the fifth sentence? If they both mean the same thing, what is the use in having the two sentences? Does the fourth sentence mean two things? If so, show the two things.

Place the two things represented in the fourth sentence by the side of the two things represented in the fifth sentence. Are they identical? Which is division? Are they both division? Make a practical example requiring the fourth sentence for the form of solution; the fifth sentence. Are the examples alike? When is it necessary to separate a number into equal numbers? Into equal parts?

Write a sentence that you can prove to be true with objects, different in form and *meaning* from any one of the five sentences. Find a sentence in arithmetic that you cannot show to be true with objects. How can you prove its truth? Is it true?

Take eight objects. Ascertain what can be done with that number of objects. Do all you can with them and write down in arithmetical language what you have done. The doing must all begin with 8—that is, 8 must be the subject of each sentence. Can anything be done with any other number that cannot be done with 8? This question does not include results—but the *doing*. Take two numbers for objects. What can you do with them together? Write down the results as before. Can anything be done with other numbers, two or more, that you have not done with these two num-

bers? Write the results, in sentences as above, together (of 8 and the two numbers). Write another sentence in arithmetic that means something else. What can be done with a number? What can be done with numbers? Thinking can only be done with things, never with words; words help thinking, but we *must* think with things.

PROBLEMS WITHOUT FIGURES.—The futile attempt to make children think in words and figures is costing every year millions of dollars, and many a boy his manhood. Teachers of all grades can test their pupils' power to think in things—that is, their power to think by dropping the use of figures for a time, and requiring the working out of problems with objects or sketches on the blackboard or slate. Have the class at board. Show me $\frac{1}{3}$ of $\frac{1}{2}$ of 6 marks. How many yards of cloth, at $2 a yard, can I buy for $\frac{3}{4}$ of $28? John walks 4 miles an hour; James walks 5 miles in the same time. They both start from the same point at the same time and walk 5 hours in exactly opposite directions. How far apart are they then? I pile cordwood 8 feet high around a lot of land 16 feet square; the pile forms right angles at the corners; the end of every stick comes clear to the outer line or boundary of the lot, and is piled at a right angle with that line. How many cords of wood? Rough drawings and crude illustrations will soon show how many pupils have the thought. Large numbers should not be used in these problems. IF is a good word with which to begin all explanations.

GEOGRAPHY.

STRUCTURAL GEOGRAPHY IS THE BASIS of all geography. Indeed, there is no other real geography (description of the earth). Political geography is history. Physical geography is physics. A study of the earth's vegetation is botany, and so on, through the various sciences that spring from real or structural geography. Elementary geography consists in preparing the mind for the study of the structure of continents. All a continental structure is or can be to the mind must be imagined. The mind, in acts of imagination, is absolutely limited in combinations to sense products or concepts that have come into it through the senses. Precisely as the architect depends entirely upon the forms already in his mind for the invention of a new structure, so must we depend on the forms of nature in our minds for the concept of a continent.

THE STUDY OF HILLS, ranges of hills, ridges, passes, plateaus, plains, river basins, divides (wrongly called water sheds), coast lines, promontories, capes, bays, gulfs, peninsulas, islands, straits, isthmuses, etc., is, essentially, elementary geography. How should these objects be studied? Just like any other objects. 1. By actual observation. Take your class out upon a hill, and observe it from all points. Study it as you would a cube, or, indeed, any other cone or pyramid. What is the base? The base line? Where are the slopes? Where do they begin? Where end? By what other name could you call the slopes? How many slopes has this hill? What do you call the lower ending of the slope? The upper? How many different kinds of slopes can you see? What do you call a steep or abrupt slope? When can land be steep and not a slope? When can a slope be gradual and not form a part of a hill? What do you call land that does not slope at all? Find such a piece of land. What are the uses of slope? What if all the land were perfectly level? Supposing the slope were hard as steel, what would be the result? Where does the rain go when it strikes the surface? How far down does it go? When does it stop? What makes it stop? Where does it go then? How does it go? When does it come out of the ground? What good does it do in the ground? These are some of the questions that may lead pupils to investigate nature, with a hill before them for the central point.

LESSON IN THE SCHOOL-ROOM.—The best and simplest means of expressing thought is by means of the concrete. Molding sand may be used by pupils to tell just what they have seen, and how they have seen it. Have pupils mold the hill in sand. The imperfections in their work will show how well they have used their eyes. Let the sand hills be criticised as to relative height, distance, angle of slope, etc. Drawing stands next to making as a means of expressing thought. Have pupils draw the hill in profile; then draw the base line and indicate position of hill. The questions in the field may be repeated and the investigations extended. Have a pupil describe a hill. It will be found that a knowledge of elementary forms, cubes, cylinders and spheres is necessary, not only to the seeing but to the description of land structure. After a few lessons the hill may be described in writing. From a hill to a range, from a range to a double range and a plateau, is a good order of development.

GRAMMAR GRADES.—Describe the house in which you live. Now describe the continent of North America. What is the radical difference in the two descriptions? Is there any difference between the description of a continent and the description of a map of a continent? What do you see in your mind when you try to describe a place, a state or a continent? Is geography a description of the earth's surface or a description of maps? Which is easier to describe? Why do you begin with a globe? What power has a child to imagine the whole earth? If you go from the whole to the part, where must the *whole* (concept) be before you can go to the part? What is in the mind of a child when he defines a cape? a bay? a mountain? What should be? What is in his mind, when he says the earth is round?

MOLDING, DRAWING, ORAL AND WRITTEN LANGUAGE are simply means of helping the student to imagine the structure of the land. The molding helps to show that which drawing and language fails to do, namely, the upraised forms. Common sifted foundry sand is the best; a table, a board, a slate or a flat tin pan will serve for a molding-board. In country schools the molding may be done out of doors.

HISTORY.

Mold a map of Charlestown and Boston, showing Bunker Hill, Breed's Hill, ships in the harbor; throw up a redoubt on Breed's Hill. Mark the line of the stone and rail fence. Draw a map showing Boston, Charlestown, Dorchester Heights, Cambridge, the British quarters, the American encampment. Make the scene as real as possible. Who are these men in the redoubt? How are they dressed? Tell me about their equipments? What kind of guns have they? How are these guns fired? Did you ever see such a gun? Describe the soldiers' ammunition. How do they carry bullets? How were the bullets made? How do they carry powder? How do they load their guns? Where did these men come from? Draw a map of the places in which they live. In what kind of houses do they live? Where do they work? Draw one of their houses. Describe the inside of the house. What do they learn? Of what religion are they? How did they get here? WHY DID THEY COME? Have they good reasons for coming? What are they? Who are those soldiers landing on the shore? How are they dressed? How do they march? Who leads them? Where do they live? Why are they here? Who sent them? Why? Hadn't the king a right to rule his own country as he pleased? Why not? Who are leading the farmers? Who is Prescott? Putnam? Warren? Stark? See the Americans as they hold their guns steadily over the breastworks until the redcoats come within eight rods? Is it not a terrible thing to kill men? Are the Americans right in firing? *What if they had run?* What excellent reasons had they for running? What gave them courage? Tell all about the battle. Who commanded the Americans? Who won? Why do the Americans celebrate the day as if it were a victory?

The questions suggest the line of study. Have pupils find the answers by reading, questioning their parents and friends, and by pictures or relics. A library of well-selected books should be in every school-house. The city or village library should be used as well as each family collection. Supposing there are only a few books, or perhaps none at all. Then the teacher must be the history and tell the story, so that it will live in the hearts of the hearers. But the main point is to arouse a genuine and enduring interest in reading history that will project itself beyond the walls of the school-room. *Take time,* let the investigation cover weeks if you can keep up the interest. First lead your pupils *to live* upon the scene; make it so real that they can hear the guns as they thunder from Copp's Hill. Then cover the stage with the actors. Who are they? How do they look? Why are they here? Go with them to their homes. All true history centers around homes. There you find secret springs of action. What do the people eat? What do they wear? What do they study? What believe? How came they in these homes? Who were their ancestors? Describe a New England farm? Compare it with an English farm. From Bunker Hill it is but a short step back to Lexington and Concord, to the Tea Party and Boston Massacre; then back to early settlements; to discoveries and the Indians; then forward to the long war. *Make everything real.* Form youthful ideals by leading to causes of noble and courageous acts. The pupils get their treasures of facts from all quarters, and bring them into the recitation. Authorities differ. One book makes bigots, many, liberals. When pupils see there is more than one side to a question, when they see how writers of history differ, they will become incredulous of dogmatic statements; they will learn that the grains of truths in history must be found in mountains of chaff. The

teacher sedulously avoids dogmatic opinions, listens to all, molds the narrations into shape, gives them body and connection, suggests questions for discussion, holds up really great men and great deeds, is tolerant with enemies, but stamps on mean motives and miserable acts.

What an opportunity to teach language! A whole class is eager to talk because it has found something to say How easily language may be molded under the white heat of thinking! A year of such training will banish incorrect language from the schoolroom. Compare it with the dreary, cold and dead parsing or analysis, or an exercise in *false* syntax. When the story is fully in the pupils' minds, and they are all anxious to tell it, give them pens and paper and they will fill sheet after sheet with good English, provided the primary work has been well done. "But we haven't the time to spend on Bunker Hill." "What of the examination"—the examination? Remain on Bunker Hill so long that from the height your pupils can see with clear vision the past and that which led to that glorious morning—and what those brave acts did for mankind—and let the examination take care of itself. It will.

PSYCHOLOGY.

WHAT ARE IDEAS?—Words are signs of ideas; or, better, words recall ideas into the consciousness. Ideas may be observed in consciousness, and described. In this way, by a protracted and careful examination, we may determine definitely what ideas are, and how they differ—results that will lead to the question, How do ideas come into the mind?

PLAN OF INVESTIGATION.—Write the following list of twenty-five words on slips of stout cardboard, one word on each side of a slip. Write the words *very* distinctly. Put the slips in the right vest or side pocket. At intervals take out one slip and look at one word. Have the mind, in doing this, in a perfectly passive condition; look at the word with perfect indifference; that is, without actively expecting anything. Then note the result.

QUESTIONS TO ANSWER by noting them down in a little book kept for the purpose.

Did an image of an object come into consciousness? Was it some particular object that you have seen? Was the image obscure at first? Was it clear at first? Was it distinct at first? If obscure at first, did it grow clearer by observation (reflection)? Did images of other objects come up with the first image? Had the image a locality in your consciousness? Was it the image of an object that you never saw personally or particularly? Were you conscious of the word before you were conscious of the image? Had the image color? More than one color? Had it form? Did it move? Did other images or words come up? What were they? Did a picture come up?

INVESTIGATIONS OF FACTS IN THE MIND may begin in this way; that is, the study of our own minds. The great danger and the greatest obstacle in the way of getting at the truth is our prejudgments. "We see what we wish to see" is a dangerous truth.

Look at a thing in the mind precisely as you would look at objects outside of the mind. Formulate conclusions *very slowly*. The quick play of the imagination is the second great obstacle; the first image will quickly fade, and a creature of the fancy will take its place. A long succession of tests noting the results, and combining them with the results of fifty or a hundred others, who may join this class, will lead us to new investigations, and, finally, to something like valuable results.

THIS LIST OF WORDS is to be followed by others in succeeding numbers. Students will please send results to me very carefully made out: Robin, hen, cow, sheep, elephant, goose, horse, turkey, peacock, stove, mouse, fence, cake, rose, flower, house, church, animal, man, object, red, white, brown, black, runs.

PEDAGOGICS.

"THINGS THAT MUST BE DONE SHOULD BE LEARNED BY DOING THEM."—*Comenius.*—What is meant by "doing"? Is thinking "doing"? Do we "do" anything when we perceive? When we judge? Imagine? Compare? Classify? Is something "done" by *every* act of the mind? Does this principle cover *all* study and work? If it does, what is its force? Can any one thing be done by doing something else? Carry this principle into school work. Ask first, What is the thing to be done? What is reading? What is writing? What is language? Clear away all the rubbish and get at *the* thing to be done. Then ask yourself, "Am I *doing* it?" Distinguish clearly between the thing to be done and the means of doing it.

EXAMINATIONS.

EXAMINE YOUR CLASSES TO ASCERTAIN THE POWER of each child to do work; by work is meant thinking and the expression of thought. Through the power to express, the power to think is manifested. There is an immense economy of power on the part of the teacher, in knowing exactly what pupils can really do. The teacher who knows this knows how to begin to teach a class. There is a serious loss of time and strength in not knowing where to begin. No grade, no course of study, no text-book, no promotion, no superintendent or principal, can tell a teacher where to begin. The child alone can do that, and even the child cannot unless the teacher knows and prizes *real* power and has the skill to find it. This is skill of priceless value. What next? is the all important question—and it can be answered only by what is. A teacher who worships words, often takes a class which has not her particular form of words, and whose members do not say definitions and rules just as she does. Her conclusion is that her pupils know little or nothing until they can say things after her inimitable pattern. This is soon accomplished by the trained crammer. "What wonderful progress they are making!" "I took them so—*now* listen."

SO LONG AS YOU WORSHIP WORDS, my dear teacher, just so long you will be kept from any knowledge of the art of teaching. *Children think;* how they think and what they think is the end and aim of examinations. Reading is thinking by means of printed words; an examination in reading is an examination in thinking. Give pupils books of one grade lower than the last book they have read, a book that they have never seen; select a good story, and then allow each child to read aloud long enough to test his power of oral reading—three, four or five pages, if necessary. Your judgment should be founded on the ease with which you understand the reader, not upon slight mistakes or mispronunciations. An examiner should never use a book in listening. Put your mind on one thing—the getting of the thought conveyed by the pupil's voice; if you get the thought with very little effort, then the reading is good or excellent. Make this the basis of all class criticism.

YOU WILL FIND UNDER NUMBER a few suggestions in regard to examinations in that direction. I would like to have all the teachers who read this paper make the following tests in all grades of common or high schools above the lowest. Write the following sentences upon the board, one by one, and ask pupils to show what they mean by objects. Marks on board may be profitably used: $12-8=4$. What is the minuend? Show it in marks or other objects. Show me in the same way the subtrahend, the remainder. Subtract with the objects. $3\times4=12$. Show what that means with objects. Show the multiplicand, the multiplier, the product. Can you see the multiplier? $12\div4=3$. Show the dividend, the divisor, the quotient. Which is the larger, the dividend or the quotient? Show the difference, if any, between $12\div4$ and $\frac{1}{4}$ of 12. In the same way the following sentences may serve as tests: $\frac{1}{2}$ of $\frac{1}{3}$ of 12; $\frac{1}{2}\div2$; $\frac{1}{2}\div\frac{1}{4}$; $\frac{1}{2}$ of $\frac{1}{4}$; $8\div2$. I have known teachers to find a great many surprising facts through these tests.

"YOU HAVE STUDIED GEOGRAPHY, have you?" "Yes, sir." "What have you studied?" "North America, sir." "Please take this paper and write out all you know of North America."

"YOU HAVE STUDIED GRAMMAR?" "Yes, sir." "Know about verbs, adverbs, etc.?" "Yes, sir." "What is the use of English grammar?" "It teaches us to speak and write the English language correctly." "Very well; write a correct description of this room."

ELOCUTION.

FRANK STUART PARKER.

Every exercise given a child should be for a definite purpose, and should be given regularly. Haphazard work in this direction is worse than no work at all, as also is work given in a slovenly way by the teacher. Promptness, interest, and precision must characterize the teacher's work if she would produce results to be desired, and in this work, as in all others where skill is to be obtained, the better the model the more satisfactory the outgrowth.

BEARING.—The first element of grace is precision; and, in improving the bearing of the body, this is the first thing to be secured. Symmetry of body being the first requisite, all bad habits, such as the carrying of one shoulder higher than the other, head leaning to one side, hips uneven, etc., are to be corrected. Let this be done by showing a child definitely what is required of him. Vague directions, such as, "Stand up straight," "Hold your head better," or "Do stop bending over,"

are worse than useless. Bring the correct habit, which you wish to substitute, clearly and with regularity into the consciousness, and the bad habit will gradually disappear.

Be sure that the children follow your directions exactly. Bad habits are as easily made habitual as good, and three or four days' careless practice will form habits which you will be three or four weeks breaking up. Work slowly and carefully, getting the right concept into the child's mind, and much time and trouble will be saved.

Where the children must turn to the right or the left in their seats before rising, see that the feet are lifted noiselessly, and placed in position without scraping, scuffling, or striking either floor or desk. From the first insist upon this, and repeat until it is done as required. Never announce that it is to be done quietly, but, if it is not, then make the requirement.

The pupils turned in their seats, have those whose left arms rest upon the desk bring the left foot well back under the seat, turning the right slightly outward, the heel falling inward. Bring the right foot back so that the right leg forms a right angle, the left forming an acute angle. In rising from the seat, bear the weight upon the ball of the right foot, and rise steadily, keeping the body upright, and avoiding the bending at the waist, which causes the body to shoot into the lengths before assuming the vertical position. One step will bring the pupil facing to the front, ready for the exercises. Do not permit any arranging of vest, overskirt or hair, or any shaking or hitching of body, but insist that the position shall be taken quietly, without bustle or fuss. Require prompt, military-like precision in all exercises of this character, and accept nothing else. Place the heels together, feet at an angle of sixty-five degrees, and carry the weight upon the balls of the feet; limbs perfectly straight; hips even. Avoid any throwing out of the hip, "slouching at hip," as it is called, and which is sometimes prescribed as an exercise. It weakens the muscles of the hip, and is never to be permitted. Correct it wherever and whenever seen, for it causes the common deformity of a hip higher by two inches or more than is normal, besides inducing an unpleasant carriage of the lower part of the torse.

Carry the chest easily active—avoid that extreme lifting of the chest which makes a child look pigeon-breasted—and be careful that the abdomen is not thrown out in such a way that the back is curved, instead of comparatively straight, as desired. Draw in the abdomen slightly as the chest is raised, and the position will be correct. Drop the arms easily at the side; see that the shoulders are even. Hold the head erect, the crown the highest point; draw in the chin slightly, eyes to the front, lifted just above the horizontal.

Require this position to be held immovably for one, two, ten, or thirty seconds, according to the age of the children; for you are working for discipline of the body, and any wavering of eye, or restlessness of poise, defeats your purpose.

Physical exercises are generally looked upon as a means for improving the bodily health. That they are a benefit to the health, by bringing the body to act more in harmony with the laws of its organism, is true, but that this is their main purpose is a serious mistake. The body is trained that it may be a better medium for the soul. All expression of the being is through the body, and any obstruction, whether it arise from unused muscles, consciousness of defects, or lack of control, are so many barriers to the full and free expression of that for which alone the body exists.

"Strength at the center, freedom at the surface, is the true condition of being." Body and soul are a unit, and they must be developed harmoniously. "Nor soul helps body more than body soul," must be the belief of the teacher who would secure all-sided growth.

Given the same emotion, it is expressed by the use of the same muscles, among all nationalities. Given an attitude of the body, expressive of a certain emotion, the attitude will react upon the mind and produce the emotion of which it is expressive. This is the law of thought and its expression, and such being the case, the matter of physical culture of the children becomes a serious matter of consideration among educators, and, if mind development be the aim of the schools, it must be given a place.

Follow the exercise for bearing, by an exercise for developing the chest. As it is impossible to describe such an exercise by words alone, I refer teachers to pages 20 and 21 of Monroe's Manual, published by Cowperthwait & Co., Philadelphia, and advise the use of exercises ii., iii. and iv. Similar exercises, equally as good, will be found in Guttmann's Æsthetic Physical Culture, published by Edgar S. Werner, Albany, N. Y., using figures xviii., xix., xx. and xxi.

For doing away with stiffness of the shoulders, so common in self-conscious children, raise the

shoulder lazily up and down several times in succession, then forward and back in the same way.

These exercises make one of several sets that I have arranged for use in public schools. They will be found sufficient, except in especially bad cases, for their purpose,—namely, symmetry of the body and a correct bearing.

Rising.
Military position.
Chest percussion.
Horizontal arm movement.
Vertical arm movement.
Shoulder movements up and down.
Shoulder movements forward and back.
Sitting.

Dr. Sargent, of Harvard, suggests that if there is great weakness of any particular part of the body, or lack of proper development, the sensible idea of building there. Guttmann or Dio Lewis' Manual are both standard books in this direction, and full of excellent hints upon the subject of physical exercise.

Great care in their use with children will be necessary. When the muscle is fatigued, stop and take something else, for your object is to strengthen, not to weaken, and weakness follows over-exertion and straining. Do not expect results the first day or the first week. It is normal, to grow into grace in a vital as well as in a moral sense.

Make your exercises as attractive as possible, and give them in a prompt, enthusiastic way as if you liked them yourself. I have seen a schoolroom perfectly disgusted with the exercises because the teacher gave them in such a slovenly way. If possible, create a pride in a proper carriage. Children will very soon see that timidity, fear, meanness, ill health, despair, cowardice or helplessness are all suggested by a passive chest, and will work with a will to overcome such a tendency. Set them to trying to walk about with books or baskets upon the head, seeing who can balance them the longest, or walk the fastest. Get them to stand against the wall, advance a few steps, and then retreat, still retaining their upright position. Encourage out-of-door plays and sports, walking and running. Make it the fashion to be well, and teach your children to look upon ill health and consequent helplessness with perfect horror. Avoid the moping about registers growing girls so affect; set them to playing with bean bags, or anything to keep them active and out of corners.

Take every opportunity possible of changing the air in the schoolroom, keeping the temperature even and the air pure, and be sure that the room is well ventilated before giving physical exercises.

When the children are to take their seats have them carry the foot nearest the seat as directly to the side as possible, bringing the foot very nearly in a line with the front of the chair, carry the weight upon that foot slightly turn the body and sit, taking care that the body does not sway forward, but sinks directly in the seat, brought there by the continued movement of the knee and hip.

BOOK REVIEWS.

There are upon the editor's table quite a number of text-books, which will be reviewed at an early date. The sole purpose of these reviews will be to advise teachers as to the best books and the best thing in books. Text-books are absolutely necessary as a *means* of teaching. It is often said that those who try to make teaching better, do not believe in using text-books. No mistake can be greater. The one claim made, and that justly, is that the text-book should be for the child, and not the child for the text-book. Bad teaching has made defective text-books a necessity, and just so far as the teaching becomes better will text-books be improved. This is strikingly shown in the history of text-book making for the last ten or fifteen years. Many a publisher has sunk his thousanks by making a book too good for the average teacher.

With this number THE PRACTICAL TEACHER passes under my editorial control. The presumption that a teacher can, at will, become the successful editor of an educational journal is not mine.

The plan of conducting THE PRACTICAL TEACHER is a very simple one. It consists of an attempt to teach, and in some degree supervise the teaching, of those who may need my help in their work. I have a very strong desire to assist teachers in their struggles to do better work in the schoolroom, and have accepted the editorship of THE PRACTICAL TEACHER that its columns may be made a means of helping those teachers who are beyond the immediate limits of my classes and personal direction.

ILLUSTRATED COURSES OF LESSONS in the common branches, science, manual training, psychology and pedagogics will make up the contents of

this paper. These lessons are to be adapted to the various grades of primary and grammar schools, and also to the ungraded country schools. They will be connected and continued throughout the year, so as to form as far as possible a complete unity.

These helps to teachers will be prepared, first, by experienced teachers; second, they will be accurate transcripts of lessons actually given; third, lessons will be written by the editor in the form of directions and suggestions to teachers.

SCHEDULE OF LESSONS TO BE PUBLISHED THE NEXT YEAR ('84 AND '85) IN THE PRACTICAL TEACHER.

1. Reading lessons to different grades. Word, phonic, script and sentence devices. Elocution lessons conducted by Mrs. Parker, late of the Boston School of Oratory.
2. Number and arithmetic lessons.
3. Language, penmanship and spelling.
4. Geography, including drawing and molding in sand.
5. History and its connection with geography.
6. Science, following the plan of investigation. Construction of apparatus in physics and chemistry.
7. Manual training in the common schools, considered in its direct bearing upon mental growth, and used as a means of teaching the common branches. Teachers will be shown how to make the apparatus used in teaching the common branches.
8. Kindergarten work in form and color, in busy work and plays, with its application to primary teaching.
9. Physical exercises, gymnastics, calisthenics, games and sports, for the growth and strength of the body.
10. School government.
11. Work adapted to the difficulties and varying conditions of country schools.

To guard against a criticism that may be made upon this plan, I wish to repeat what I have very often said; that very little, if any, progress in education can be made by imitating the devices and so-called methods of others; that study or practice of education which does not lead to original thought and the discovery of principles, gives very imperfect and meager aid to true progress. Imitation always degrades the copy, while creation needs a copy only for comparison and suggestion. If this be true how can a plan of lessons, as here sketched, be of use to teachers? I answer that the lessons are not for imitation. There are two legitimate ways of learning principles; one, directly by the study of psychology and the application of its discovered laws to human growth—that is, by the correct and direct study of theory; the other, and more elementary way, is the study of principles through the manifestation of their power in action. If then the lessons and directions be the true exemplifications of fundamental truths in education they should lead every thoughtful teacher, who uses them, directly back to a cognition of their underlying principles. To the unthinking they will be dead and useless. Every teacher who seeks for the truth, by earnest and honest investigation, will surely add to the power and skill of every other teacher of a like mind. I have one overwhelming desire in my heart, and that is to be such a truth-seeker myself, and by such seeking, to aid all others in whose hands the main responsibility for the perpetuity of our country and the progress of the future rests.

IT IS PROPOSED TO GIVE IN THESE COLUMNS SIMPLE LESSONS IN PSYCHOLOGY AND PEDAGOGICS. It will be the aim of these lessons to lead teachers to investigate the facts in consciousness in a scientific manner, to see the laws of mind-growth through the facts, and to apply them in teaching.

EXAMINATIONS OR REAL TESTS OF REAL WORK WILL BE A VERY IMPORTANT DEPARTMENT OF THE PRACTICAL TEACHER. The ideal that this paper will strive to realize is, the harmonious growth of body, mind and soul; the highest realization of which is the highest type of character.

The examinations, therefore, under this ideal, must be simply and solely tests, not of quantity learned or of knowledge gained, but of that inward growth into character, and of power to do right things in a right way. The task of working out a system of scientific examinations under this high aim is an extremely difficult one, inasmuch as under it, all quantity tables of weights and measures must be abandoned.

It has been my good fortune to come in contact with many of my fellow teachers, either personally or by correspondence. I come to you again in this, to me, new way, with one desire in my heart, and that is to help the children to good and noble lives. If this work helps one of God's little ones in its struggle for truth, this venture cannot be a failure.

FRANCIS W. PARKER.

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Honest investigation and a courageous application of the truth when found.

READING.

[Continued from September Number, p. 6.]

We will suppose that the words, fan, doll, hat, cap, rat, lamb, hen, bell, egg, nest (see September number, page 8), have been taught by means of objects and script-writing upon the blackboard. That they are known to pupils, the following tests may aid in showing,

1. Write the words on blackboard, as "the fan," "a doll," and have pupils show the objects as you write.

2. Write all the words, and have pupils show objects after the words are written, following the order in which they are written.

3. Point to different words and have pupils show objects.

4. Show objects and have pupils point to the words.

5. Point to the words and have pupils pronounce them as you point.

6. Have pupils point and pronounce.

7. Have pupils copy each word, the teacher writing one at a time.

QUESTION. Have your pupils keen appetites for the learning of words? If they have not, then your teaching has been a failure. On the other hand, if their interest has been aroused, and their desire for more words strikingly apparent, then you can safely begin sentences.

MANY very good teachers think that sentences—and nothing but sentences—should be taught at first. Which should be taught in the first steps, words or sentences, is a question to be decided by the most careful and prolonged examation of children's powers. That should be done which children can do best, and in this case the best thing is the easiest. Some children have more power to do than others; so that one class or one school cannot be taken as a criterion. It may be found that some children begin better with words, while others can learn sentences with excellent results. A teacher who makes up her mind that she has found *the thing*, rarely finds anything more.

A PLAN FOR TEACHING SENTENCES WITH DEVICES AND SUGGESTIONS. Pupil, holding a fan in his hand, says, "This is a fan." Teacher—"See the chalk say what you said." Teacher writes, "This is a fan." Tell me what the chalk said. Pupil, presenting the fan, says, "This is a fan."

PUPILS MUST NEVER BE ALLOWED TO SAY OR READ A SENTENCE IN ANY BUT A PERFECTLY NATURAL WAY. They will say the sentence as they always have said it in talking if they hold the objects in their hands, and are led to see the connection between the written sentence and their own acts. Teacher—What does the chalk say, John? John—This is a fan. Teacher—Pass the fan to Mary. What does the chalk say, Mary? Mary—This is a fan. Teacher erases fan and writes "doll." "Now what does the chalk say? Who can tell?" John steps to the table, picks up a doll, and says, "This is a doll." Teacher—Mary may tell me what I wrote. Mary takes the doll and says, "This is a doll." Teacher erases "doll" and writes "fan." "Now who can tell me what the chalk says?" Teacher erases "fan" and writes "hat." The group or class should be dismissed, or the word changed, just before the pupils show the slightest inattention or lack of interest. In three or four lessons all the single words that have been taught may be written and read in sentences under the idiom "This is ——." Two or three new words may be added by using objects. In teaching new words great care should be taken to associate the idea directly with the word as in teaching single words. Teacher erases "nest," and says—"Now, what shall I write?" Let pupils select object. The teacher has taken care to have the new object in the collection. If a pupil should bring an object, the name of which has already been learned, let teacher write the word. Pupils will say, "We

have had that word, we want a new word." A pupil finds a bird, and the sentence is again filled. "This is a bird." One new word at a lesson is generally sufficient unless pupils show power to take more. Be sure to repeat new words in succeeding lessons. If pupils do not know them, use the objects as at first.

COPYING THE SENTENCE. Write the sentence in a large hand on the blackboard, THIS IS A FAN, and have pupils copy it on the blackboard, on paper or on slates. Insist, from the first, upon absolute correctness in spelling, the use of capitals and punctuation. Have pupils read aloud what they have written. Change the sentence by erasing and writing a word that they have learned. "This is a doll." (See use of script, page 8, September number.)

DEVELOPMENT OF PLAN. Write on the blackboard, "What is this?" and read it without asking pupils to read it. Then introduce the following idioms, making new sentences by changing single words.

1.

Idiom. THIS IS A ——. Write, one word at a time, in place of the dash, all the object words known by pupils. Have pupils read each sentence, holding the appropriate object, and suiting the action to the words. As soon as one sentence has been read, erase the last word, and write another known word in its place. After the known words have been read, teach two or three new object words.

SENTENCES.

This is a fan.
This is a doll.
This is a hat,
This is a cap.
This is a rat, etc.

2.

Write question on board, WHAT IS THAT? Idiom, THAT IS A ——.

Proceed as in 1, with this exception, have pupils point to objects when they say "THAT IS A ——."

SENTENCES.

That is a fan.
That is a doll, etc.

Teach two or three new words.

3.

Idioms. THIS IS A ——, AND THAT IS A ——. Pupil holds one object and points at the other.

SENTENCES.

This is a fan, and that is a doll.
This is a fan, and that is a hat.
This is a cap, and that is a hat.
This is a hat, and that is a cat.
This is a rat, and that is a cat.

4.

Idioms. IS THIS A ——? YES, THIS IS A —— Lead each *pupil to ask* and answer the question, holding appropriate objects:

Is this a fan?
Yes, this is a fan.
Is this a doll?
Yes, this is a doll, etc.

5.

Idioms. IS THAT A ——? YES, THAT IS A —— As in 4.

Is that a bird? (pointing to object.)
Yes, that is a bird.
Is that an egg? (an.)
Yes, that is an egg.
Is that a nest?
Yes, that is a nest.

6.

Idioms as in 4 and 5, new words "No," "Not and "It."

Is this a fan?
No, this is a doll.
Is that an egg?
No, that is a nest, etc.;

Or,

Is this a rat?
This is not a rat, (not.)
What is it?
It is a cat, etc.

7.

Idioms. WHERE IS A ——? HERE IS A —— Proceed as in 1.

SENTENCES.

Here is a hen.
Here is a nest.
Here is a pig.
Here is a pen.

Teach three or four new object words.

8.

Idioms. WHERE IS A ——? THERE IS A —— Teacher writes question and reads it at first, then allows pupils to read the questions.

SENTENCES.

Where is a fan?
There is a fan.
Where is a doll?
There is a doll.
Where is a rabbit?
There is a rabbit, etc.

Teach three or four new object words.

9.

Change "a" to "the" and review sentences that have been taught.

SENTENCES

Here is the hen.
There is the
Th
I
N
Id
HERE

Where
Here is
Where
Here is t
Where is
Here is th
Here is the
and there is the dish etc.

10.

Idiom. WHERE ARE THE ——? HERE ARE SOME ——. Change "the" to "some" "two," "three," etc.

Where are the fans?
Here are the fans.
Where are the dolls?
Here are the dolls.
Where are the rats?
Here are the rats.
Where are the rabbits?
Here are the rabbits.
Where are the apples?
Here are the apples.
Where are the pigs?
Here are the pigs.

11.

Idiom. THESE ARE ——.

These are fans.
These are dolls.
These are hats.
These are the caps, etc.

Idiom. THOSE ARE ——.

Those are fans.
Those are flags, etc.

12.

Idiom. THESE ARE ——, AND THOSE ARE ——.

These are eggs, and those are nests.
These are hats, and those are caps.

13.

These are fans and dolls.
Those are eggs and nests, etc.

14.

Where are the fans and dolls?
There are the fans and dolls, etc.

15.

Idiom. SEE THE ——.

Pupils point at objects as they read.

the fan!
he doll!
e bell!
e hen!

16.

I SEE THE ——.

fan.
chair.
ox.
p, etc.

17.

DO YOU SEE THE ——? YES, I SEE

fan?
fan.
you see a girl?
Yes, I see a girl, etc.

18.

Idioms. DOES HE SEE A ——? YES, HE SEES A ——.

Does he see a cup?
Yes, he sees a cup, etc.

19.

Idioms. DOES SHE SEE A ——? YES, SHE SEES A ——. DO YOU SEE A ——? YES, I SEE A ——.

Does she see a doll?
Yes, she sees a doll, etc.

20.

Idiom. OH, SEE THE ——!

Oh, see the flag!
Oh, see the pig! etc.

21.

New words, "black" and "white." THIS IS A BLACK ——.

This is a black fan.
This is a black hat.
This is a black cap.
This is a black box.
That is a black rat.
Here is a white lamb.
There is a white dish.
This is a black hat, and that is a white hat.
Is that a black hat?
No, that is a white hat.

22.

Idiom. I HAVE A ——.

I have a fan.
I have a doll.
I have a hat.
I have a cap.
I have a rat.
I have a lamb.
I have the egg.
I have the nest.

23.

Idiom. HE HAS A ——.

He has a cup.
He has a mug, etc.

24.

Idioms. I HAVE A ——. YOU HAVE A ——.

I have a fan.
You have a doll.
I have an egg.
You have a nest.
I have a trap.
You have a rabbit.
I have a cup.
You have a mug.
I have a fan, and you have a doll.
I have an egg, and you have a nest.
I have a trap, and you have a rabbit.
I have a cup, and you have a mug.

25.

Idioms. WE HAVE ——. THEY HAVE ——.

We have two fans.
We have two dolls.
They have two hats.
We have two fans, and they have two dolls, etc.

26.

Idioms. WHERE IS THE FAN? THE —— IS — THE ——.

Place the objects in succession on, over, above, near or by the chair, box, mat, etc.

The fan is on the chair.
The fan is on the box.
Where is the doll?
The doll is on the chair.
Where is the hat?
The hat is on the mat.
Where are the eggs?
The eggs are in the nest.
Where are the birds?
The birds are in the tree.
Where are the apples?
The apples are on the tree.

27.

I have a fan in my hand.
I have a doll on my chair.
He has the cat on the mat.
We have eggs in this dish.

28.

This is my doll.
That is my fan.
This is his hat.
That is his cap.

29.

Idiom. THE —— RUNS.

The rat runs.
The cat runs.
The dog runs.
The boy runs.
The rabbit runs.
The girl runs.
The goat runs.
The cow runs.
I run, etc.

30.

Idioms. WHAT CAN THE —— DO? THE —— CAN RUN.

The rat can run.
I can run.
He can run.
You can run.
The cat can run, etc.

31.

Idioms. CAN THE —— RUN? YES, THE —— CAN RUN.

Can the cat run?
Yes, the cat can run.
Can the rat run?
Yes, the rat can run.
Can the chair run?
No, the chair cannot run.
Can a tree run?
No, a tree cannot run.

32.

Change "run" to "walk," "swim," "jump," "hop." Proceed as in 29, 30 and 31.

33.

Idioms. WHERE CAN THE —— RUN? THE —— CAN RUN —— THE ——.

Where can the cat run?
The cat can run on the mat.
Where can the rat run?
The rat can run over the mat, etc.

34.

COMBINED IDIOMS.

I have a fan.
This is my fan.
It is in my hand.
See my fan.
Do you see my fan?

35.

Little dialogue read by two children; one holding a doll, the other a fan:

Here is a fan.
This is my fan.
I have a fan.
There is a doll.
Is that your doll?
This is a fan, and that is a doll.
See my fan!
See my doll!
Do you see this fan?
Yes, I see that fan.
Do you see my doll?
Yes, I see your doll.
Can the doll run?
No, the doll cannot run.
The cap is on the doll.
My fan is black.
Where is the fan?
The fan is in my hand.
Where is the doll?
The doll is in your hand.

36.

QUALITIES OF OBJECTS.

Have pupils discover qualities of objects.

The fan is black.
The cat is black.
The cap is white, etc.

Many lessons of this kind should be made, using the idioms and words known to the children.

This plan is merely an outline. It should not be taken as a consistent whole. It is doubtful whether the order of presenting idioms is the best, that is, the easiest. The principal things to be observed are, first, short, easy sentences. Second, slight changes in sentences so that pupils will be successful every time they try to read. Third, everything should be dramatic to the learner. The stimulus of the presented objects and the actions of the pupils, if rightly directed, will tend to make the sentences real, and associate them strongly with the thoughts expressed. Fourth, every sentence should be uttered under the direct stimulus of the thought precisely as if the readers were talking.

RULES TO BE OBSERVED IN TEACHING FIRST STEPS.

1. Carefully introduce each new word, that is, the name of an object, action, quality of an object, or modifier of an action, by first presenting the object, sketch or picture of the object, or by bringing the idea of it to the child's mind through conversation or questioning.

2. Words that do not recall ideas, except in their relations, should always be taught in phrases or sentences.

3. Make every thought and its expression real to the child by suiting the action to the word.

4. Never allow a child to use an unnatural tone in reading.

5. Let the child get the thought by means of the written words, and not by hearing the sentence read.

6. The emphasis, inflections, and pauses should spring from the thought in the child's mind, and not be imitations of the teacher's voice.

7. Slow, monotonous pronouncing, and quick, explosive utterances, should both be avoided.

8. Never allow carelessness or guessing.

9. Keep up, in your pupils, a keen interest for words:—

(1.) By teaching words very slowly at first.

(2.) By putting the words taught into many different sentences.

(3.) By writing short sentences, and by making very slight changes in them—generally of a single word—so that the pupils will be successful every time they try to read a sentence.

(4.) By patience in waiting until the pupil grasps the thought. Be especially patient with dull children.

(5.) Above all, by having a bright picture behind each word or sentence. That is, teach so that words used either singly or in sentences will awaken and recall pictures in the mind.

The next number of this paper will contain: First, directions for changing from script to print. Second, the use of phonics in teaching reading. Third, devices for teaching reading. Fourth, specimen lessons in reading.

LANGUAGE.

[Continued from September number.]

ATTAINMENTS OF PUPILS.—They can copy words in sentences easily and accurately. Their writing is good, and they have acquired the power of writing in sentences from dictation all the words they have learned.

DEVICES FOR TRAINING CHILDREN TO TALK WITH THE PENCIL—DESCRIPTION OF ACTIONS.—The pencils are sharp, slates clean, and the children ready. Teacher: "Now, children, I want you to say with your pencils just what I do. [The teacher sits down in a chair.] Please tell me what I have done." Should not allow pupils to tell orally what has been done, as this would lead all to write the same sentence. Have each pupil see the act and describe it originally. While the pupils are writing, the teacher should look at the work, erase mistakes, and be ready to write any word that the pupils cannot spell. (See Rules for Teaching Spelling, page 10, September number PRACTICAL TEACHER.) Have pupils who have written correctly read their sentences. Encourage originality in expression. One pupil will write, "You sat down," another, "You sat down in a chair," "The teacher sat down," "Miss Smith sat down." Do not permit sameness of sentences.

ACTIONS may be made an almost inexhaustible means of sentence-writing. All forms of sentences may be developed. Power of quick and accurate observation may be cultivated by this device. A skillful teacher may discover a line of development from a simple sentence to sentences with simple modifiers of subject and predicate to compound and complex sentences. Actions sug-

gested: Sit in a chair; stand up; walk; walk slowly. Pupil: Miss Smith walked slowly. Walk fast; pick up a pin; write a word on the board; write on a slate; go out of the room; rap on the door; come into the room; bow, and say good-morning; draw a picture on the board; point to the clock; sing, laugh, run, etc.; take out your watch, look at it, look at the clock, and then put the watch in your pocket; open the window and look out; shut the window; draw the curtains.

THE QUESTIONS MAY BE CHANGED from "What did I do?" to "What am I doing?" "What have I done?" Allow a pupil to perform and act, and have the class describe it. Have two or three pupils consult together, plan what they will do, and then do it, the class describing the act as before. Have pupils listen for two or three minutes, and tell what they have heard.

TELLING THE POSITIONS OF OBJECTS.—Put a hat on a box. Write the question on the board, "Where is the hat?" and have pupils answer it with their pencils. Put the hat on the table, on a desk; hang it on a nail or peg; put it on a boy's head. Put a box on the table, under the table, near the table. Pupils will write the sentences: "The box is on the table," "The box is under the table," "The box is by (or near) the table." "Where was the box?" may be asked. Put more than one object of a kind—blocks, for example—in a box. Scholar. The blocks are in the box. Take them out. "Where were the blocks?" "They (or the blocks) were in the box." Show a stem with leaves and flowers. "Where is a leaf?" "A leaf is on the stem." "Where are the leaves?" "The leaves are on the stem." "Where is the flower?" Take the leaves off of the stem. "What did I do?" Walk to the window. "What did I do?" Go out of the room. "What did I do?" Enter the room. Show the difference between "in" and "into." Walk across the floor. In this way nearly all the prepositions may be taught. Have pupils tell with their pencils when things are in the room and in the yard. "Where is the clock?" "Where is the desk?" "Where is the door?" "Where are the windows?" "Where are the pictures?" "Where is the blackboard?" "Where is the maple tree?"

USE OF PICTURES.—Every teacher should have a large collection of pictures. They can be cut from illustrated papers, magazines, old books, geographies, etc. Buy some cheap card-board, cut it properly, and paste the pictures on it. Another way is to paste pictures upon stout manilla paper, and arrange in the form of charts. Wall pictures may be used. For purely sentence writing (the present work) wall pictures are preferable. Prang publishes some excellent pictures of trades. Steiger, of New York, will furnish beautiful pictures published in Germany.

WRITE ON THE BOARD THE IDIOMS THEY HAVE LEARNED IN READING.—That is ——. There is ——. There are ——. Those are ——. I see ——. Teacher: Tell me with your pencils one thing you can see in the picture. "That is a boat." "There is a girl." "I see a tree." You may allow them to add "in the picture" at first. Write on the board, "Where is the ——?" "Where are the ——?" "The boat is on the water." "The boat is in the pond." "The boat is tied to a post." "The fishes are in the water." "The hat is on the girl's head." Question: "What is the —— doing?" "The boy is feeding the fishes." "The girl is looking at the fishes." "The fishes are swimming in the pond." "What would you do if you were there?" "I would ride in the boat." "I would watch the fishes." "What kind of a —— is that?" "That is a large boat." "That is a large tree." "The girl is small." Picture, *Monroe's Advanced First Reader, page 81.*

TAKE ANOTHER PICTURE.—*Barnes' First Reader, page 63.*—"What has the —— ?" "The bear has a stick in his paws." "The girl has a basket in her hand." "How many —— are there?" "There are six children." "There is one man." "There is one house." "What are the —— doing?" "What kind of a —— is it?" "Where have the —— been?" "Where do you think they are going?" *Swinton's Primer, p. 14.* "What do you see in this picture?" "I see a boy and a girl." "I see some birds." "What is the —— doing." "The girl is carrying some sticks." "The boy is drawing a wagon." "The birds are flying." "Where are they going?" "Why do they carry the sticks?" "Where did they get them?" "Whose wagon is it?"

USE OF OBJECTS IN LEARNING TO TALK WITH THE PENCIL.—Give each pupil, or, better, have them find for themselves, a plant with leaves and flowers. Teacher: Please tell me one thing you can see in the plant? The pupils will write readily one sentence. Teacher: Now, write something else.

While the children are writing, the teacher should watch the work of each child so far as possible. The main purpose is to get pupils to see for themselves with the least possible suggestion. Teacher: I am afraid you do not see much, James; look again. You see something, Martha, try again. If a pupil sees something he cannot name, tell him the name and write it on the board. Avoid the continuous use of the same idiom, i. e., the plant has ——. Get all the variety in idioms possible. Most if not all questions will be asked by the objects, and the investigations will grow into a system, if pupils *are not forced* into one from the first. Do not foreordain what the child must see and say, but let the God-created foreordination act as it will under the right conditions, and then follow; thus both child and teacher will learn.

LET EACH PUPIL HAVE A LEAF.—Teacher: (writes on board). Tell me one thing that you can see in the leaf. Now, one more thing; read your sentence, John. Who can see something that no one has seen? Take two leaves and compare. Teacher: Tell me one thing that you find alike in both leaves, two things, three things. Tell me one thing that you find different; two things. Take three different leaves and compare them, then four and so on. Teacher: To-morrow morning I want each one of you to bring in a flower, and we will talk about it with our new tongues (pencils).

EACH PUPIL WITH A FLOWER. — Teacher: Tell me one thing you can see in your flower? Step by step each pupil may be led to see all the parts, and write, sentence by sentence, what he sees. The words leaves, stamens, petals, corolla, pistils are developed. Take two flowers and compare them—then three flowers. Every discovery gives zest for the next.

PUT A STUFFED BIRD BEFORE THE PUPILS.—Teacher: Tell me one thing that you can see. (Looking over Mary's shoulder.) You have good eyes, Mary; you may go to the table and see something more. Richard, your eyes are not good. The difficulties of seeing are generally entangled in the mechanics of telling (writing, spelling, punctuation, capitalization). A properly graduated development of this power—step by step—sinks the expression into the automatic, and gives the child perfect freedom to observe. Introduce new words—technical terms—just as fast as the object calls for them.

IN THIS WAY GRADUALLY INTRODUCE PLANTS, LEAVES, FLOWERS, ROOTS, FRUITS, ANIMALS, SHELLS, MINERALS, AND MANUFACTURED ARTICLES.—When possible, give each pupil an object or objects. Follow the line in which pupils show the most interest. Never force investigation, but let it follow its quiet, sure course. Value, first of all, power to observe, and, second, mechanical accuracy of expression. NEVER ALLOW ANY CARELESS WORK; NEVER ALLOW A WORD TO BE SPELLED WRONG, OR A MISTAKE IN CAPITALIZATION. OR PUNCTUATION.

QUESTIONS UPON OBJECTS.—After the children have acquired a fair degree of power to observe, and great interest in observation, write a series of questions on the board for them to answer. At first write a single question, and have it answered before the next is written; next step, write two questions; next, three, and so on. Questions: What have you on your desk, or before you on the table? I have a flower. What is the color of the flower? What is the shape of the flower? How many petals are there? What is the shape of a petal? What other flower has petals like this? What is the use of the calyx? How many stamens do you find? What is the color of the stamens? Where is the pistil? What are the parts of the corolla called? How many sepals do you find? What do the petals form when together? What do the sepals form? Have pupils write every answer in a complete sentence. It may be a good plan to have them write the questions. These questions, it will be seen, have the form of an examination, and may be used as such by the teacher, principal, or superintendent. Questions may be asked about any object that has been previously examined.

ASKING AND ANSWERING QUESTIONS.—WHOSE? Question: Whose hat is that? That is John's hat. Whose book is this? That is this boy's book. Whose books are these? Those are John's and William's books. Those books belong to John and William. Those are boys' books. Whose nose is that? That is my nose. Whose nose is that? That is Mary's nose. Whose noses are those? Those are girls' noses. What kind of shoes are sold at the shoe-store? We learn to use the apostrophe and letter s by using them in the right places. They are a part of the spelling.

WRITE WHAT IS SAID.—Pupils have copied many sentences using marks of quotation. Teacher: John is a good boy. What did I say? You said, John is a good boy. Teacher: Sarah, please say something. Sarah: I love my doll. Teacher: Write what Sarah said, I love my doll. John: I saw a fire on my way to school. Teacher: What did John say?

PUPILS TELL WHAT THEY HAVE READ after a reading lesson.—Teacher: Children, please write one thing that you have read, in one sentence. When this can be done easily, ask for two sentences, then three, four, and finally the whole story. All the devices hitherto suggested are to train pupils to write *sentences* by expressing at every step ORIGINAL THOUGHT.

THE IMPORTANCE OF FORMING A FIXED AND AUTOMATIC HABIT OF EXPRESSING EACH THOUGHT IN A CORRECTLY WRITTEN SENTENCE CANNOT BE OVERESTIMATED.—The habit of confused, jumbled composition is easily formed and cannot be changed without the most persistent effort. It is very easy to allow children to write in a helter-skelter way, and the productions are often looked upon as wonderful; on the other hand good automatic sentence-making requires an immense amount of persistent and consistent work that does not look so pretty to the inexperienced eye at first, but which will grow into the best results. Approximately, in one year and a half of steady work (the second year and the first half of the third), children can be trained to use their pencils with wonderful power and accuracy. When the habit of correct sentence making is once acquired, then paragraphs, pages, and full compositions may be written with great ease.

LANGUAGE IN TEACHING NUMBERS.—Teacher: What did I do? The teacher takes eight blocks, separates and combines them, and asks the above question after each particular act. The pupils write their answers. Write upon the board the sentence,

$$4 + 3 = 7$$

Teacher: Please make a story (problem) about this sentence. One pupil: I have four apples and James has three more; how many apples have we? Another pupil: Jane has four dolls and Edna has three more; how many have they both? After a little practice in this direction, write several sentences on the board and have pupils make problems about them.

$$4 + 4 = 8$$
$$2 \times 4 = 8$$
$$8 \div 4 = 2$$
$$\tfrac{1}{2} \text{ of } 8 = 2$$
$$8 - 4 = 4$$

Encourage variety in forms of expression and use of objects.

Make problems about uniting numbers: 1, uniting equal numbers; 2, separating a number into numbers; 3, separating a number into equal numbers; 4, finding the equal parts of a number.

ORAL LANGUAGE.—All the devices here given for writing sentences may be used in training pupils in oral language. All except the use of figures should be used in the first year's work.

RULES TO BE STRICTLY FOLLOWED.—1. NEVER ALLOW ANY CARELESS WORK. When you see it is not the best the pupil can do—erase, or put the work aside, and have him try again. Demand the best and you will get the best, and with it the respect of the pupils, who will honor you for your courage, and who will soon feel the joy that the beauty of best-doing always brings. Never allow any careless work; keep them up to their best efforts in writing, spelling, capitalization, punctuation, and *observation*.

2. EVERY SENTENCE SHOULD BE WRITTEN FOR THE SAKE OF THE THOUGHT.—The form of the sentence should always be secondary—but because it is secondary it should be the exact and distinct expression of the thought. Never have pupils write a sentence for the sake of the sentence.

3. RULES FOR CAPITALS AND PUNCTUATION may be written on the board for constant reference; also, lists of words, idioms, and other forms of expression may be written for the same purpose.

4. If possible, have pupils read all they write. As much reading may be taught in this way as with the use of books.

WHAT SHALL WE DO WITH PUPILS WHO HAVE FORMED BAD HABITS IN WRITING?—Use the same devices and begin all over again—with this exception or suggestion—adapt thought or observation to the mental powers of your pupils.

The next number of the PRACTICAL TEACHER will contain devices in language teaching adapted to higher grades.

NUMBER AND ARITHMETIC.

WORK FROM 1 TO 20 INCLUSIVE. ASCERTAIN WITH THE GREATEST CARE JUST WHAT THE PUPIL KNOWS OF NUMBER. Begin with the number that is one larger than the one which the pupil really knows.

WHAT IS IT TO KNOW A NUMBER?

To know:

1. The number as a whole. Take 8.

2. The equal numbers in a number (division), IIII IIII—II II II II.

3. The equal numbers that make a number, (multiplication) IIII IIII / II II II II

4. The equal parts of a number, IIII, IIII ½ —II II II, II ¼.

5. Any TWO equal or unequal numbers that may be found in a number,

(subtraction) IIII IIII—I IIIIIII / II IIIIII—III IIIII

6. Any two equal or unequal numbers that make a number,

(addition) IIII IIII—I IIIIIII / II IIIIII—III IIIII

It will be seen that the representations of numbers in 2, 3 and 4 are identical to the eye. (1) The purpose of each operation differs radically from the others. The purpose arises from a special necessity found for a particular kind of doing in essentially practical matters. (2) We must find the quarts in pints (the twos in), the yards in feet (threes in), hence the necessity of finding the equal numbers in a number. (3) I have 6 quarts; how many pints have I? 6 twos of pints, union of equal numbers. (4) If 8 apples are given to 4 boys how many do I give to each? Here 8 apples must be separated into 4 equal parts—in order to find the value of one part. Comparison of 2 and 4. In both cases I have the same number. In 2 I must know one of the equal numbers, in order to find the number of equal numbers—in 4—I must know an entirely different thing, and that is the number of equal parts, in order to find the value of one part. Confusion of these operations that are essentially different is the source of much trouble *in logical reasoning in arithmetic.*

DO THESE FIVE DIFFERENT OPERATIONS COVER ALL THE ESSENTIALS IN THE USE OF A NUMBER? This question may be answered by finding some operation or fact not included in them. Addition is uniting two or more numbers; how then, can, knowing any two numbers that make a number cover the whole ground of the facts in addition? 2+4+3=9. When 6 is learned 2+4 is learned; when 9 is learned 6+3 is known, so that the union of more than three numbers is simply a repetition or review of *what has been learned before.*

IN WHAT ORDER SHOULD THESE DIFFERENT OPERATIONS BE LEARNED? The order should be determined by the power of the child to discover the facts in the number taught. If he sees the equal numbers in a number first, then it follows that he (one child) learns that first, or if he discovers first the equal numbers that make a number a similar deduction should be made. A long series of investigations would bring an honest investigator to some safe conclusions. Certainly a child should learn what he discovers and in the order of discovery.

EACH CHILD SHOULD BE LEAD TO DISCOVER FOR HIMSELF, WITH THE SLIGHTEST POSSIBLE HELP, ALL THE FACTS IN A NUMBER. A discovered truth is often nearly learned in the discovery. Discovery employs the highest mental action, while unneeded help weakens, and in the end renders the helped helpless. Of one thing there is no doubt; a child can discover every fact in a number for himself if the teacher lets him and leads him.

THE MEANS TO BE USED IN TEACHING NUMBER.—The psychological definition of number is: Number is the limitation of things by ones. The mind in numbering limits things by ones (the smallest measure). We learn to do by doing the the thing to be done. Limiting things by ones, is the thing to be done. We cannot think of a number without thinking of a number of things. There is absolutely no other way to learn number than by numbering things, numbering not counting; counting is ordinal—the fourth finger is four in counting. All the fingers are four in numbering. By the thorough and complete application of this definition to every step of numbers and arithmetical teaching, mental power is used in the most economical way, in gaining a knowledge of the limitation of things by ones.

WHAT OBJECTS SHOULD BE LIMITED BY ONES, OR IN OTHER WORDS WHAT OBJECTS SHOULD BE USED IN TEACHING NUMBER.—Those objects should be used which are essentially the most practical for the child at the time of learning; objects that lie, or should lie, in the child's immediate surroundings; objects that a child should

study. That is, the essential things studied are qualities and properties of things in which the one property of number comes in as essential, in knowing, but an accidental thing in study. The child in the kindergarten is learning numbers in the best possible way when he takes eight blocks, and makes different forms out of them. The making necessitates the separation and uniting of the eight blocks in all possible ways. Of all pupils I ever saw, a boy fresh from a kindergarten in St. Louis, knew 12 the best. The motive in learning is not number, but form, yet number as an accident is learned much better than it is when the learner is made conscious of the thing to be learned. All objects used in teaching form may be profitably used in teaching numbers, cubes, cylinders, spheres, pyramids, cones, squares, triangles, oblongs, lines, etc. The forms may be cut out of wood, pasteboard, or paper by the children (Manual Training). The cubes and other solid bodies may be made out of clay. The clay can be obtained at any brickyard or pottery. The forms may be painted, thus bringing in the important element of color. How many red cubes have you? How many blue cubes? How many red and blue cubes? Numbering the lines, surfaces, corners, angles, edges and points is a good exercise in limiting things by ones.

IN THE STUDY OF ELEMENTARY SCIENCE NUMBERING MAY BE MADE AN IMPORTANT FACTOR.—In Botany, leaves, flowers, roots, stems, twigs, branches, veins, lines, edges, colors and seeds of all kinds should be used. In Zoology, the parts or members of the animal, the number of animals, the relative size of parts to each other in the same animal, and the size of one animal compared to others. In Physics, measuring and comparing apparatus (made by pupils). In weights and measures—the children should do all the weighing and measuring for themselves. For this purpose, measures—pint, quart, (wet and dry); gallon, peck, bushel, inch, foot, yard, and rod measures. A pair of scales should be at hand. Sawdust, shoepegs, water, minerals, boxes, wood, boards, and animals, may be used as things to measure. In Writing and Drawing the number element should be used. Write so many letters in a definite number of rows, for example, have the pupils write four lines of the letter I in four rows, and write four sentences from dictation.

IT IS BEST TO HAVE PUPILS HANDLE THE OBJECTS AND MAKE ALL THE LIMITATIONS FOR THEMSELVES. — Pupils cannot well discover the truth in objects held or manipulated by the teacher. Let them make and discover by making their own limitations and they will not be so limited in knowledge as they sometimes are. Put the work of limiting things by ones (numbering) in the hands of your pupils; let them weigh, measure, buy, sell, unite and separate. In this work, if properly conducted, children will find great pleasure.

ALLOW THE BEGINNERS TO USE THEIR OWN LANGUAGE IN DESCRIBING WHAT THEY DO WITH NUMBERS.—Do not force upon children the idioms peculiar to arithmetic; nothing can be more dangerous to observation and thought than the learning of an idiom entirely new to the child before the thought is clear. What the language of arithmetic should be, will be discussed in future numbers of this paper. One great help in the discovery of the proper language, is the discovery of just what a child sees in numbers of things, and how he describes what he sees. The proper idioms may be slowly acquired by gradually associating them with the thought.

WHEN A PUPIL CAN LIMIT THINGS BY ONES UNAIDED BY THE PRESENCE OF OBJECTS, THE USE OF OBJECTS THEREAFTER FOR THE DEFINITE LIMITATION THAT IS CLEAR WITHOUT THEIR USE, WEAKENS MENTAL ACTION.—This statement answers the question of when and how long, objects should be used in teaching numbers. They *must* be used for the purpose of gaining ideas of numbers and their relations; as well might we try to learn botany without plants, or zoology without animals; but when the ideas and their relations are in the mind, their use for the purpose of bringing into the consciousness *what is already in the mind,* cultivates a habit of mental laziness, of dependence rather than freedom. Objects must be used all through the study of arithmetic when new conditions are presented that cannot be grasped by the pupils without objects. For example: money should be used in teaching interest, and blocks in cube root.

WHEN A NUMBER IS LEARNED, WHAT IS LEARNED?—This question is often asked, with an implied inference that the tables are left untaught. Let us see. The equal numbers in six are, three 2s and two 3s, written in the common forms are $6 \div 2 = 3$, $6 \div 3 = 2$. The equal numbers that make 6 are three 2s and two 3s, so written: $3 \times 2 = 6$, $2 \times 3 = 6$.

The equal parts of 6 are $\frac{1}{2}$ of 6=3, $\frac{1}{3}$ of 6=2. The unequal numbers in 6, 2 and 4, and 4 and 2, written 6—4=2, 6—2=4. The unequal numbers that make 6, are 2 and 4, and 4 and 2, written 2+4=6, 4+2=6. These, so far as the number 6 is concerned, are all the multiplication, division, partition, subtraction and addition tables. They should be arranged in the usual order of tables for reviews.

FACTS IN NUMBERS are the elementary relations of numbers, as 3+4=7, 9—6=3, two 5s=10, 10÷5=2, $\frac{1}{2}$ of 8=4. These facts in order to be facts to the child, must be learned by means of objects as has been shown; first discovered and then used until the fact or judgment sinks into the mind's automatic action, taking in its use the least possible mental energy, and thus freeing the mind for higher acts. The substance of the tables should be the immediate unconscious property of the mind. Which is the shortest road to this freedom is the question; whether by limiting things (solving problems) until the facts can be used unconsciously—or by a repetition of the *statements* of facts, i. e., saying the tables.

In the November number of this paper this discussion will be continued. Devices and specimen lessons for the teaching of arithmetic will also be given.

PSYCHOLOGY.

[Investigation continued from September.]

In trying the experiments with the words robin, hen, cow, etc., were you conscious of color and form? Or were you conscious of these ideas (images) without color? Can you think of the color, red, without thinking of a red object? Try the words run, walk, jump, as indicated in September number. Can you think of the ideas that these words recall without thinking (mental seeing) of some object running, walking, or jumping? Try the words on, in, near, under, over, through. Can you think of these relations without thinking of related objects? By thinking is meant the conscious presence of ideas or images in the mind. Try figures, 3, 5, 7, etc. What is the effect? Can you think of numbers without thinking of numbers of things? Look at an object, a red apple, for example; shut your eyes and hold the image of the apple in your consciousness. What is the exact difference in the two effects? Try this experiment with several objects. You say that you can recognize a person whom you have seen and know. What is the psychological process of recognition? Try to analyze it. Why do you often mistake one person for another?

A METHOD OF INVESTIGATING THE CONTENTS OF YOUR OWN MINDS, SLOWLY, CAREFULLY AND THOROUGHLY, INDISPENSABLE TO A STUDY OF PSYCHOLOGY.—The contents of the mind must be brought into consciousness, and then mentally perceived and examined, just as you investigate objects that seem to be external to your mind. All teaching can do is to lead you to make such investigations in a way that will enable you to find the truth. The manifestions of thought in other minds must be interpreted by judgments and conclusions gained from a study of your own mind; if these judgments and conclusions be inaccurate, then your interpretations will be false. A generalization is of value to you just so far as you can verify it by the truth within you. The truth you discover in things is the measure and interpreter of all the truth you ever can acquire by means of words. What idea, concept, judgment and imagination mean, is just what you discover them to mean by examining these objects of thought in *your own* consciousness. The habit of thinking things are external to the mind, must be charged to the habit of mentally perceiving the effects of external objects in your consciousness. I *judge* that a man stands before me, but I *know* that there is a certain definite effect in my mind. I judge that it is produced by an object—a man. We use terms like idea, recognition, perception, but do we know what they really mean? Can we ascertain by examination? Of words? No, of the things or acts themselves.

PEDAGOGICS.

[See page 14, September number.]

By "doing," Comenius did not mean doing with the hands alone, as in writing and making, or with the vocal organs, as in speaking. This maxim had for him but little reference to the expression of thought. It was the mind's doing that gave to him the tremendous force of this principle. Perceiving, judging, imagining, comparing, classifying, are essentially *doing*. This principle covers every method of education, and has absolutely no exception or modification. What is the force of this truth when it is so simple and comprehensive and its application is so near at hand? The answer to this question covers all the great mistakes, if,

indeed, it does not cover all the mistakes, in teaching. *We spend a vast amount of time and toil in trying to do a thing (definite in itself) by doing something else.* This is certainly a grave charge to make, but it is more grave from the fact that it can be proven. This question could be discussed to great length in these columns, but it is thought preferable to ask questions that may lead to investigations. What is reading? What is not reading? What is the difference between oral reading and talking? Can a child who has been taught to talk, be taught to talk again? What discrimination should be made between improving a child's power to talk and *teaching* him to talk? Can you teach a child emphasis? What is not reading, if reading is getting thought by means of written or printed words? What is the use of expression in getting thought? Of oral reading in teaching reading? Is teaching pronunciation teaching reading? What is the relation of figures to numbers? Will any amount of teaching figures give a pupil a knowledge of arithmetic, if arithmetic is the science of numbers? If geography is a description of the earth's surface, is it possible for a map description to be geography?

LEARNING TO DO BY DOING leads some profound thinkers to believe that we learn to teach by teaching, and they are right, but it is best to *do a great deal of thinking* before we try to learn to teach by teaching.

LANGUAGE VS. GRAMMAR.

E. W. KRACKOWIZER.

It is but little more than a century since the Germans began to teach their mother-tongue in the common schools. Their *Schriftsprache*, so-called, had been tacitly reserved for the gymnasia and universities as a "higher study"; while the respective dialects of each duodecimal kingdom, duchy, principality, province or district were the polyglot vernacular of the *Buergerschulen.* It is therefore comparatively easy, as well as highly instructive, to make an historical examination of the German school-master's theory and practice as a language teacher. Accordingly, we present here, a condensed abstract of the introduction to Kehr's exhaustive work.*

The first Reader—entitled, characteristically enough, *Der Kinderfreund*—was published in 1776, by the famous pedagog Rochow. Its preface contains these words: "Language is best taught conversationally; the teacher by this method not only holds the pupil's attention, . . . but, what is of the greatest consequence—compels him to *think* out his own answers."

Ten years later, Lorenz, in his "Brief Manual on the correct use of Rochow's and all other good Readers," was the first to show true insight into the matter by according a higher pedagogic value to the content than to the grammatic structure of language. This principle, wherever adopted, elicited an enthusiasm, quite unprecedented, among all classes of pupils and gave them a most gratifying clearness of understanding and readiness of expression—thus demonstrating the truth of Comenius' prophetic postulate: "*Words should neither be taught nor learned except in association with things.*"

But, alas, this enthusiasm soon subsided, and the school-master, returning to his ancient, mechanical ways, again "dropped" his mother-tongue in the lower schools, and had it "crammed" and memorized as so much grammar in the higher schools. Here we venture to quote literally as follows:

"For the poor children this grammar method was a serious misfortune, since it necessitated an analysis of the High-German book-language (*Hochdeutsche Schriftsprache*), before gaining any real acquaintance with it. For the old-fogy pedagog, however, this was so exceedingly comfortable, that the essential nature of teaching and of the child's mind were again wholly lost sight of by him. His *modus operandi* was ingeniously simple: he presented rules and definitions with mechanical dogmatism and had them echoed by the class *verbatim et literatim;* despite lack of all understanding they were next "learned by heart" [sic!] at home and then "recited" in school under the shadow of the ferule. But apart from all other considerations the scheme had this merit: the natives were naturally astonished at the marvelous wisdom displayed by their progeny at the public "examinations" [sic!], and hence could not fail to appreciate the schoolmaster's transcendent learning. How well I recall this method—if method it can be termed—as practiced in the days of my youth when our examinations used to come off in the parish church! Our capacity as readers was tested by the rapidity with which we were able enunciate the genealogics in Chronicles I, 1 to 11 and 24 to 27—after which ordeal we were commonly bombarded with such questions as these: "Name the ten parts of speech."—"What is a noun, adjective, verb," etc.?— "What preposi-

* "Anweisung zur Behandlung Deutscher Lesestücke."

tions govern the genitive, dative, accusative," etc. —"Decline the pronouns 'my,' 'thou,'" etc.— "What is the third person plural, imperfect indicative passive of 'to beat,'" etc.?—It goes without saying that as these startling facts were indoctrinated, so they just were rattled off—to-wit, by means of vain and empty repetition! Hence there was gain neither in thought nor in expression, for nobody attached any importance to the practical application of all this grammatic lingo, any more than to the exposition of the thought-object (*Sprachstoff*), or to the explanation of the word-sense (*Wortsinn*). Hence, predestined as we were to do some thinking on our own parts for all that, we were continually going astray in our misguided investigations. Moreover, our fund of inspiration would suddenly run dry amid the stammering confusion of us boys and the tearful blushes of the girls, when, prompted by some luckless intuition, the "practical" member of our visiting-board happened to put some such questions as these: "Repeat what you have just read in your own words"—or: "Boys, write me a letter just as if I were a master-mechanic, and inquire if I be willing to apprentice you, come Easter; and if so, under what terms and conditions"—or: "Girls, I am a dry-goods dealer, you know; now write me a line ordering material for a dress, stating style of goods and color desired, number of yards, price and manner of shipping." Such occasions as these furnished ample demonstration of the fact that want of thought entails lack of words, and that "memorized" knowledge, so called, is by no means the same thing as the rational ability to *do*. Thus the essential thing was ever lost sight of; neither was the pupil introduced into the language, nor the language to the pupil; and callow school-boys, unable to use their mother-tongue correctly, were expected to theorize about it! . . . To be sure, it seems like a self-evident fact, that language, man's constant servant in thought, speech, and writing, can never be made useful through the acquisition of "grammar" rules, brainlessly monotone "reading exercises," endless "dictations" or shallow formalism and hair-splitting "rhetoric." This "method" was nevertheless endowed with remarkably tough longevity; within twenty or thirty years it was still in vogue in many of our village schools!

ANSWERS TO CORRESPONDENTS.

COL. F. W. PARKER:

Dear Sir,—Will you kindly give me your reasons for excluding a spelling-book from a course of study? Are you satisfied that children will make as good spellers by taking words as they meet them in regular lesson work as they would by the use of a good, well-arranged speller? What are the objections to using a book in spelling? Your former kindnesses have helped, and I am emboldened to still ask favors. Yours truly,

SUPT. SCHOOLS.

Please read the talks on Reading, Language and Spelling in the September and this number (October). The points of these talks and those that will follow, briefly summed up, are as follows:

1. Writing is used as an important means of teaching reading. Writing and spelling are identical; that is to say, when pupils are writing words and sentences, they are learning to spell in the most direct and simple way.

2. The point to be gained in the first grade work is absolute accuracy in copying sentences. The second point is power to write in sentences from dictation, with absolute accuracy, the vocabulary already acquired. The third and last point is power to say anything with the pencil that the pupil thinks, providing thinking is made (as it should be) the one means of mental growth. If this plan is followed with great care and thoroughness, the pupils of the third grade (primary) will be able to write what they observe and think, in correct language, with accuracy, legibility and rapidity, and talking with the pencil will be as natural and as great a pleasure as talking with the tongue.

3. The sole conditions of talking with the pencil (composition) are, first, something to talk about, that is, thoughts to express; and, second, that these thoughts be expressed as freely and persistently with the pencil as they evidently should be with the tongue. I say "should be," because of the fact that very often thinking is not the purpose of teaching, therefore there is little or no thought to express orally or in writing. The precious time is taken in memoriter study and recitation. When this is the case, it stands to reason that the power to use either the oral or the written language cannot be developed. The whole question turns upon the *motive of teaching*; if it be the generation of thought power, and the two avenues of expression (oral and written) be continually used, then in all studies new ideas are gained, and the incoming of a new idea brings the need for the oral and written words with it. Every new relation (original thought) brings a new sentence, and these words and sentences are fixed in the mind by repetitions of the oral and written expressions.

4. To illustrate, all thought gained in reading is reproduced in writing; object lessons are given from the beginning to the end of the course, and each result of observation is written. Geography furnishes countless subjects for writing. All topics in history are put upon paper. Problems, rules, definitions, after they are discovered, are fixed by writing. In fact, every lesson furnishes a subject for writing, and the power to express thought with the pen, renders it very easy for pupils to meet the demands of the teacher for written presentation. The main questions are: Is this plan sensible, feasible and right? If it is, can it be followed? If it be followed, of what use is the spelling-book? One use may be suggested, that of storing up the forms of unknown words in the memory, until the ideas they should recall come to join them. But is this the greatest economy of power?

In learning words, it is the stimulus of the ideas or thought, without doubt, that demands the words. Learning the cold, dead forms without the slightest inspiration of thought requires a large expenditure of the lowest form of mental energy, *i. e.*, memory. But even if the learning of unknown words is of some appreciable use, cannot the time so spent be given to the generation of thought with far more valuable results? Again, what wise teacher can select the words his pupils will use in their future lives?

Finally, in this direction, what is the educational value of spelling? The difficulties in English spelling are entirely unnecessary; they do not make the thought clearer or the means of getting it easier. It will be a happy day for our children when every vestige of unnecessary difficulties are removed from the English language. Then phonetic spelling will come by nature after a child has learned to talk, and is learning to read.

5. Grant that it is useless, and worse than useless, to learn the forms of unknown words, cannot words and their meaning be learned from the spelling-book at the same time? That is, cannot each word learned, be used in sentences? Yes, and this plan is a great improvement over the customary way of using the spelling-book. Several new books, like Harrington's and Beecher's, are arranged on this plan. But if the plan here sketched be followed, what is the use of such dry, formal sentence-making? Thought isolated, unconnected with a great body of knowledge, is apt to be shallow and superficial; it fades from the mind for lack of associations. Thought should demand words, not words thought. "Nothing in educating should be done for the sake of the thing done," is a sound maxim. It is not necessary to make sentences for the sake of the sentences; sentences make themselves when there is thought to express. Create necessity for right thinking and right words will follow. The sentence-making spelling-book is a step in the right direction—a direction that will end in the total abolition of such books. To conclude, the only pretext for the use of spelling-books is bad teaching, and bad teaching will exist just so long as bad results are demanded and prized by principals, superintendents, and boards of education. Let the demand from first to last be correctly-written pages of thoughtful English, and the spelling-book will soon take its place with other bygone relics.

One thing I have omitted in answering your questions: The use of the reading-book as a speller, or the selection of words by the teacher for spelling lessons, are just as bad, if not worse, than the use of a ready-made spelling-book. Invariably the words used should *be demanded by the thought.*

COL. F. W. PARKER:

Dear Sir,—I have just been reading "Talk Twenty-Second" in "Notes of Talks on Teaching," and I am so pleased with your ideas in regard to teaching history that I wish very much to carry them out with two little pupils of mine. My difficulty (at least one of them) is in not knowing which are the best text-books. Knowing your interest in little people, I have taken the liberty of writing to ask which are the best French, German, English and American histories for children.

The children are twelve and thirteen, and are just beginning the regular study of history, although they have learned something of history along with their geography, and from the children's histories and historical novels I have read the past two vacations. I want to thank you for the list of words in THE PRACTICAL TEACHER, as it has saved me a great deal of trouble.

A partial list is given as follows: Stories of American History, Towle's Heroes of History, Higginson's Young Folks' History of the United States, American Explorers—Lee & Shepard, Boston. Boys of '76, Boys of '61, Story of Liberty—Harper Bros. Butterworth's Young Folk's History of Boston, Young Folk's History of America—Estes & Lauriat, Boston. Foreign History, Dicken's Child's History of England, Charlotte M. Young's Young Folk's Histories—Estes & Lauriat, Boston. Emma Marshall's History of France—E. P. Dutton & Co., New York.

COL. F. W. PARKER:

Dear Sir,—Being convinced that the study of our own language should form a most important part of the work of our schools, we write to ask you for a plan or system upon

which it might be successfully conducted. Our work begins with girls of ten or twelve years of age, and extends through a graduating course. What text-books would you recommend for teachers' reference? How much of technical grammar should be taught, and how much time should be spent upon it?

For some suggestions upon teaching language, please read THE PRACTICAL TEACHER. The description of plan began in the September number, and will continue throughout the year. The best plan incorporated in text books is by Miss Stickney, formerly teacher of the training school, Boston. The books, The Child's Book of Language, Letters and Lessons in Language, are published by D. Appleton & Co.; Lessons in Language, by Messrs. Heath, Ginn & Heath; O. T. Bright's Book on Language, D. Appleton & Co., are very suggestive.

BOOK REVIEWS.

Improvements in reading-books for the last twelve years have been steady and marked. Publishers have kept fully up to the demand. The greatest faults in text-books are due to an attempt to fill all the requirements of an exacting public. "Some people want it," is the invariable answer to the question, Why did you put this seemingly useless thing in the book?

A method of teaching is the adaptation of a subject to the learning mind. A reading-book should have matter arranged for this adaptation. That is, it should follow a definite plan, founded upon sound pedagogical principles. Reading-books should embody such a plan—consistently and thoroughly worked out. In order to have a standard of comparison, it may be well to present the principles that ought to be applied in making readers.

THE PROCESS OF LEARNING TO READ CONSISTS IN LEARNING A VOCABULARY OF WRITTEN OR PRINTED WORDS.—There is no doubt an ideal vocabulary,—a vocabulary which the average child can learn with the least possible expenditure of force, and which will be of the greatest use to him in all his future reading and study. Ideal primary readers should have this ideal vocabulary.

THE IDIOMS WHICH A CHILD SHOULD LEARN TO READ ARE THOSE THAT ARE ALREADY FAMILIAR TO HIM, HE HAVING LEARNED THEM IN THE SPOKEN LANGUAGE.—An idiom new to the beginner in reading greatly enhances the difficulty of learning to read. A child has become accustomed to get thoughts by certain idioms, and although he may know every word in a sentence, he cannot get the relation of ideas (thought) because he has never heard words in that particular relation before. All idioms should be learned by children in the oral language, thus reducing to the minimum the difficulties of the printed language. The question of the idioms in use by the average child is one of immense importance in making or judging a first reader. Certainly the idioms used in a primer or the first part of a first reader should be those only that are in familiar use by intelligent children. Primary teachers should notice and keep a record of all the idioms children use when they enter school.

SYLLABICATION, DIACRITICAL MARKS, PROLONGATION OF WORDS TO INDICATE SOUND, MARKS OF ACCENT INCREASES THE DIFFICULTY IN LEARNING TO READ.— The beginner should not learn a written or printed word that he does not know how to pronounce. A word is learned by repeated acts of association with its appropriate idea. When an association is made the learner pronounces the word from habit, without the slightest conscious effort. Of what use is syllabication, marks that indicate accent or sound, when the pupil has perfect power over both? Not only are they useless, but they add greatly to the obstacles in the way of the learner. It may be said that a diacritical mark makes association easier, by enabling the pupil to find out for himself the pronunciation of words. To this it may be answered, that with very few exceptions the initial vocabulary consists of words which contain in themselves sufficient indications of the proper sounds to be given.

EACH WORD IS LEARNED BY REPETITIONS OF ACTS OF ASSOCIATION.—It follows then that primary readers should present a sufficient number of repetitions of the same words, in order to fix them in the learners' minds. The child gets the thought readily from a sentence; in two or three readings of the same sentence all interest fades from the mind, and there is no more stimulus to acts of association. The same word should be repeated in a great many different sentences, and behind each sentence there should be a new and pleasant picture. Now comes the chief fault in our series of readers. The largest primer or first and second reader ever published does not contain the number of repetitions necessary to fix the words in the pupils' minds. The difficulty is in the small size of the books. Several of the

most enterprising publishers have attempted to overcome the objection to small first readers by publishing advanced first, second, third, etc., readers. These books are of great value, for they not only repeat the words in preceding readers, but they generally present much better reading-matter than their predecessors. For students who have learned to read, books of three and four hundred pages are made, while the beginners are confined to a hundred or less. The pictures in the books to be reviewed (Munroe's, Appleton's, Swinton's, Barnes' and the Eclectic) are very fine indeed, but it is a question whether there are not too many pictures. Would it not be better to have more reading and fewer pictures? One good picture in three or four pages is perhaps enough. Most first readers take a great deal of space for lists of words, charts of sounds, script, etc. Lists of words are useless. Every bit of reading, after pupils use books, should be in sentences. The *picture* that the sentence brings into the child's consciousness fixes the words in the mind. The stimulus to mental activity is lost in pronouncing single words. Script is best learned from the blackboard before the primer is taken.

The pages of all primary readers, with the exception of a few excellent and suggestive pictures, should be filled with sentences and stories. Four or five first readers and two or three second readers, at least, should be used in teaching children to read.

THE BOOK THAT DOES NOT AROUSE A GENUINE LOVE FOR READING IS A FAILURE.—Any plan that has form or mechanical execution for its main motive leaves out the wonderful energy of thought in overcoming obstacles. Books arranged on phonic or phonetic plans, without the closest regard to that which a child loves, are generally complete failures. A sentence that does not bring into the child's consciousness a familiar and interesting picture creates no desire for more. The same can be said of empty word repetitions. Writers of primary readers must have their hearts close to the hearts of the little ones in order to know the stories they love, and to write those sentences or stories under the extreme limitations of—1. A very small vocabulary. 2. The still smaller number of idioms known to the child, and the necessity for short sentences. 3. The use of sound or phonics in making associations between ideas and printed words. 4. The continued demand for variety. After the first steps have been well taken, the way is comparatively easy, for writers of juvenile literature are furnishing an abundance, from which excellent selections may be taken.

NATURAL OBJECTS ARE BEST ADAPTED TO TEACHING CHILDREN THE FIRST STEPS IN READING.—Reading may be taught by means of a series of observation lessons, using plants, leaves, flowers, animals and minerals, thus making elementary science the main purpose and reading incidental. When the pupils become interested in observing the objects, the necessary associations can be made with written words and sentences. The more intense the child's interest in the observed objects, the more stimulus he will have to associate ideas with words. After one hundred or more words have been taught on the blackboard, then print, and the first readers are taken. What readers can be found that continue the use of a vocabulary gained from the study of natural objects? Several have been tried, but they have failed for lack of adaptation to the child mind. Miss Buckley, in "Fairy Land of Science;" Olive Thorne Miller, in "Little Folks in Feathers and Fur;" Mrs. Munroe, in Munroe's Advanced Third Reader, have shown how intensely interesting science may be made to third, fourth and fifth grade pupils. But who will write books of the same kind for the little beginners? To make science the end, and object teaching in reading, writing, language and spelling the means of teaching it, would be a tremendous economy of time and power.

THIS OUTLINE OF WHAT READING-BOOKS SHOULD BE has taken so much space that the books on the editor's table must remain unreviewed in this number.

ANY TEACHER CAN BE OF SOME HELP TO BRIGHT PUPILS; ONLY THE BEST TEACHER CAN REALLY AID DULL CHILDREN.—"I wish that boy was out of my school," said of a dull pupil, marks a selfish if not a cruel teacher, while a genuine love for the weak and backward shows the heart of a true teacher. Be thankful that you have dull pupils (if dull pupils must be), for the lower the order of mind the higher the art must be to lift it up, and that lifting up will give you strength. MANY PUPILS ARE DULL BECAUSE THEY HAVE DULL TEACHERS.

THE PRACTICAL TEACHER.

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Honest investigation and a courageous application of the truth when found.

READING.

(Continued from October number.)

PRESERVE THE CHILD'S VOICE.—That dreadful compound of a whine and a groan, which very many teachers can hear if they listen, is the direct product of a long painstaking and painful drill. This dire mistake is not far to seek, yet blessed is the teacher who finds it. It is found in the wrong motive. That motive consists in making pronunciation, emphasis and pauses the purpose of teaching reading. The child has acquired the perfect power of emphasis. If the thought is in the mind, the emphasis will be perfect. Any attempt to teach emphasis by imitation hinders the power to emphasize in oral reading, that is, it makes talking and oral reading different, to the detriment of the latter. Pronunciation, enunciation, articulation, accent and pauses have been acquired. Pronunciation may be improved with most children; but to make it the aim of a reading lesson destroys the real aim, that of thinking by means of printed words.

PRONUNCIATION AND ARTICULATION are of immense importance, but the true place to teach them is in talking, that is when pupils are expressing thought *in their own language*—thought gained from observation, hearing or reading. When the stimulus of thought is at its height, a correction in language will have its greatest effect. To vex the child's soul by numberless corrections in pronunciation when he is struggling to get thought, discourages attempts in the right direction and turns them in the wrong one. I have seen, in my own classes, years ago, forty-nine children watching intently the fiftieth child who was striving to pronounce every word correctly (we called it reading), and when perchance a word was mispronounced, down came the forty-nine trip-hammers upon the poor victim's head, and down he sat to allow another to wrestle with word-pronouncing. What visions of beautiful thought must have passed through that boy's soul when his whole mind was struggling with correct pronunciation! The already acquired power of talking is one great means of learning to read; this means is entirely lost when it is made the end. *Learning to do by doing*, finds here its tremendous force. Learn to get thought by means of printed words—by getting thought by means of printed words, and use all else, that should be used, as means. Would you ever correct a pupil who mispronounces a word in reading aloud? Yes, very often I would. But whenever the correction turns his attention away from the thought, I should not make the correction. Simply pronouncing the mispronounced word by the teacher is generally sufficient for the time.

PRESERVE THE VOICE OF THE CHILD.—Most teaching of elocution consists in trying to correct faults acquired by bad teaching in primary schools. Listen to the merry voices of children on the playground, and then listen in the school-room! The greatest elocutionists have discovered the true principles by observing little children. A defect in articulation can be cured by following exactly the process by which a child learns to articulate. Listen to the voices of children, what emphasis, what melody, what harmony! Should teaching ruin those voices? Has teaching ruined voices? Who speaks first? By following nature, the child has learned to talk well; by the devices of man he reads abominably. *Never allow a child to read a single sentence unnaturally.*

CHANGE FROM SCRIPT TO PRINT.—It is not easy to tell exactly when this change should be made, for there are two very important factors to be considered, in making a decision. One is the power of the child, the other the skill of the teacher. It is a very general statement to make, that children should use script for five months, or that from one hundred and fifty to two hundred words should be learned from the blackboard before print is used. Everything depends upon the attitude of the child toward the work. If the use of script

has been a failure, as it often is, then the use of print may present a good opportunity for a change. If the children have a keen appetite for words; if they learn new words readily, and have a fair number at their command, it is well to begin with print.

FIRST STEPS.—We will suppose that the children have read an interesting story in script from the blackboard. After the school is dismissed, let the teacher print the same lesson in the same place. The next day, without the slightest suggestion of the change, the teacher calls up the group, and asks the children to read the story. If the reading in script has been well taught, the class will read the printed lesson with very little or no hesitation. The great danger lies in the fact that a novice in this work will feel that there is a difficulty, and show it either by her manner or words. Faith will remove mountains, and it may add to your faith when I say that after fourteen years' experience, I have never known a skillful teacher to fail in this test. Follow this lesson with a few more of the same kind. Print a few sentences. Do not put script and print side by side. Then charts, either Monroe's, Appleton's, Barnes' or Butler's may be used profitably. The lessons of the chart may be written first upon the blackboard and read, then read from the chart.

BEGINNING WITH BOOKS.—Make the children hungry for books, and give them the power to read the first sentences with great ease. By judicious blackboard work, the mystery of a book is banished, and the first difficulties overcome. The pupils have a good vocabulary of script words which they can readily and almost unconsciously change for the printed forms. The great difficulties of the book lie in the use of new idioms, and too rapid changes from easy to hard reading. This can be overcome by using several primers and first readers. Read the first part of one reader or the whole of a primer, and then do the same with another reader or primer. Five or six readers may be used in this way; then begin again with the first reader used, and read in succession the second parts. Generally two years, or, better, the work of two grades, may be profitably given to first-reader reading. Follow this with the reading of five or six second readers in the third grade, and if the work is well done *no more time need be spent in teaching reading.* Reading thereafter may be used as a means of study or to gain information.

USE OF PHONICS IN TEACHING READING.—A thorough knowledge of the words and their relations to the printed elements of oral words is indispensable to any intelligent use of phonics. An oral word is pronounced or made by the utterance of one articulate sound, or more than one articulate sound successively. Each sound, with one exception (sound of h), demands for its articulation a definite and fixed position of the vocal organs. Change this position in the slightest degree and the sound must change, that is, it will be another sound. Each sound has a definite beginning and a definite end in utterance, and before another sound can be given there must be a change in position of the vocal organs. When a change from one position to another is being made, there must be a slight cessation of sound; a cessation that is too short to be perceptible to the ear, owing to the intense rapidity of utterance. If the sounds continued during every change of position, then there would be an immense number of intermediate sounds, as each change from one particular sound to another would give a particular intermediate sound. These pauses are perceptible between syllables, words and sentences, but not between the articulate sounds of a syllable. Now, perceptible pauses can be made between the sounds of a syllable, and at the same time the word may be perfectly understood by little children. If there were intermediate sounds, they would not be uttered in pausing between each sound, therefore it holds to reason that the word could not be understood when so uttered, in fact the word could not be pronounced without articulating the intermediate sounds. The proof is indisputable, that there are no such intermediate sounds between the well-known articulate sounds.

WHAT IS SPELLING BY SOUND, OR SOUNDING A WORD?—Both of the phrases are wrong. Spelling by sound is not spelling in any sense, and it has nothing to do or nothing in common with true spelling. We sound a word when we pronounce it; therefore, the latter phrase is meaningless. The preferable name is the German one, *langsamer Aussprache,* or slow pronunciation. The slowness consists in a slight holding or dwelling upon each particular sound, and a slight perceptible pause after one sound is uttered and before another sound in the same syllable is given. A word is slowly pronounced by making the otherwise imperceptible pauses perceptible.

THE PROCESS OF LEARNING TO PRONOUNCE

SLOWLY consists in fixing the attention upon an oral word, and then articulating the first sound, pausing and then articulating the second sound, and so on until the last sound is articulated. *Each sound should be given in an easy and perfectly natural tone.* There should be no strain nor stress. In slow pronunciation the oral word should be mentally severed from the printed word. Strange as it may seem, the greatest difficulty in slow pronunciation is the close association of the oral with the printed word. Good teachers very often ask the question, How do you pronounce a word with silent letters? Slow pronunciation, in itself, has nothing whatever to do with printed words. Practice in this direction is an excellent test of discrimination and concentration.

TEACHERS CAN NEVER SUCCEED IN USING AND TEACHING PHONICS UNTIL THEY BECOME EXPERTS IN SLOW PRONUNCIATION.—This work teachers can do for themselves provided they can pronounce words correctly in the ordinary way, for all that is required is a simple analysis of that which is distinct in the mind. Hold the oral word in the consciousness and mentally look at it. Begin with small words like man, mat, map; practice a few minutes every day. Take a stanza of poetry and pronounce it slowly. For example, "Twinkle, twinkle, little star," and practice it until you pronounce it slowly with great ease and distinctness. When little children readily understand you, your slow pronunciation is sure to be very fair.

THERE ARE TWO USES OF PHONICS IN TEACHING. The first is to enable the learner to associate a written or printed word, new to the child, through a *known* oral word, with its appropriate idea, without any help from the teacher. In the second or third grades it aids the learner to pronounce a new word; but all the words taught in the first steps should be known to the beginner. The second use of phonics is to remedy defects in articulation.

THE CHILD KNOWS HOW TO PRONOUNCE, HE THEREFORE CAN USE UNCONSCIOUSLY ALL THE ARTICULATE SOUNDS before he has learned a written or printed word. When the first written word is taught as a whole (as it always should be), it is associated with an oral word (a combination of articulate sounds). The attempt to synthesize the written word by associaitng one by one the articulate sounds with the letters, and then combining them into words, is unnatural, and therefore a great waste of time. The easiest and the most natural step is to associate the whole written word with the whole oral word. This is unconsciously done when the written word is associated with its appropriate idea. The too early analysis of a written word into its associated sounds, is also a violation of a plain principle. A thing must be clearly in the mind before it can be analyzed. Now, the idea of the oral word is clearly in the mind, but in the first steps of reading its association with the written word is very vague, making any true analysis impossible. The attempt to make a child analyze that which is not in his mind is very common, and very disastrous. The thing ready for analysis is the already unconsciously synthesized oral word.

THE CHILD'S POWER OF SEEING RESEMBLANCES OR ANALOGIES IS VERY STRONG. Teach reading by the so-called word method. (I say so-called, because the use of the word as a whole is only a small but important factor in the true method.) If you teach words as wholes without the least regard to the phonic arrangement of words, and after repeated associations of oral and written words, the parts of written words (letters and syllables) will have a strong tendency to recall the sound or sounds they have recalled before, thus making associations easier. But when the words are taught in the order of a phonic arrangement of the same vowel sounds, as mat, rat, cat, this tendency is very much enhanced. If the child has recalled the oral word mat, then *at* in cat will have a tendency to recall the same combination of sounds. For this reason, following a phonic arrangement of words like the vocabulary in the September number, is an essential aid. The stimulus of objects, and of pictures that sentences represent, is of far more value than the phonic order. The task before us is to reconcile the two aids, that is, to keep up the interest and still use the sounds. It is not necessary to follow rigidly the phonic order; words like here, there, where, whose, etc., may be freely introduced.

THE STOCK ARGUMENT FOR THE USE OF DIACRITICAL MARKS AND PHONETIC CHARACTERS is that English words are unphonetic. By phonetic is meant the use of one character (letter) to recall the same sound in all words. It will be a happy day for brains and power when English print is strictly phonetic. But the phonic difficulties of learning the first steps of reading are greatly ex-

aggerated. The acquisition, under proper teaching, of one hundred and fifty or two hundred words gives the learner the key to all further reading. Now, out of four hundred and forty-nine given in the September number, as the child's initial vocabulary, two hundred and nineteen are strictly phonetic *to the child* when he is learning the words. Two hundred and seventeen contain in themselves as marked indications of the vowel sounds as diacritical marks can give them, and only thirteen are entirely unphonetic. The *e* in slate, skate and ate, indicates fully the sound the preceding vowel *a* should recall.

The poor, innocent children have suffered vastly more from fancied difficulties than from real ones. Oh, the messes of diacritical marks, of invented characters and phonetic ventures that have been used to overcome obstacles that never existed except as fancies in the brain of a logical (?) thinker who never had learned the power of children—by teaching them. The attempts to teach phonic analysis by naming and numbering the sounds make a true teacher's heart ache. *Make a difficulty and you will have it.* Alas! how many difficulties are made by those who do not know children.

THE POWER OF ASSOCIATION MAY BE INCREASED BY TRAINING CHILDREN TO PRONOUNCE WORDS SLOWLY.—It has been already stated that children can readily understand familiar words when slowly pronounced by the teacher. They have the oral words clearly in their minds, and the perceptible pauses make them little or no difficulty. Slow pronunciation may be begun on the first day of school, but it should be for some time entirely unconnected with reading. Let the teacher pronounce a few words in the ordinary way, asking pupils what she says; then, without the slightest warning, pronounce words slowly. Teacher—m-a-n. What did I say? P-l-u-m. Tell me what I said. Touch what I say—n-o-se, m-ou-th, ea-r-s, ch-i-n, f-ee-t. Point to what I say—c-l-o-ck, w-a-ll, w-i-n-d-ow. Do what I say—s-t-a-n-d u-p, s-i-t d-ow-n, r-u-n, j-u-m-p, h-o-p, s-k-i-p, l-au-gh. Tell me what I say—J-a-ck a-n-d J-i-ll w-e-n-t u-p the h-i-ll. Two or three interesting, lively exercises each day for three or four weeks will prepare pupils for the next step, which is to have them pronounce words slowly themselves. Teacher—Say this word as I say it—m-a-n. The teacher may give one sound, and pupils imitate her, or give the whole word at a time. After considerable practice in this direction, use the term "pronouncing slowly," and then pronounce words, and ask pupils to pronounce them slowly.

NOW THEY ARE PREPARED TO ASSOCIATE ARTICULATE SOUNDS DIRECTLY WITH LETTERS, in this way: Fifteen or twenty written words have been taught; for example—fan, man, pan, ran, mat, rat, cat, hat, etc. Let the teacher write these words on the blackboard, and at the same time, pronounce them slowly. Do not separate the letters in writing; that is, write as you always have done. Pupils will pronounce the word the moment the teacher has given the last sound. Considerable practice of this kind will give pupils the power to pronounce new (written) words slowly. Write a new word (in phonic order), and begin to pronounce slowly; the children will, very likely, finish of their own accord. After this they will be eager to pronounce words as the teacher writes. All new words may for a time be pronounced slowly, but the moment a child can pronounce a word in the ordinary manner, without first pronouncing slowly, do not have him pronounce slowly. Reserve slow pronunciation for difficult words. You have now developed the power of the child to make associations of written and oral words without the aid of a teacher. In my experience this power thus trained is marvelous, and strange to say, it carries with it an element of great danger. Children may be easily trained to pronounce new words without making the slightest association with ideas. *Be sure, at every step, to have the new word bring an idea clearly into consciousness.*

WHAT IS TO BE DONE WHEN A KNOWN VOWEL LETTER IS TO BE INTRODUCED WITH A NEW SOUND? Write the word, and in slowly pronouncing give the new sound without note or comment. For example, write slate, and say ā when you come to that sound. Follow this with a few words with the same vowel sound, and the difficulty will be overcome.

By thus carefully observing the laws of unconscious mental action, and graduating the steps to the growing power of the child, phonics may be properly used as a great aid in teaching children.

LANGUAGE.

THE SKILL OF LEGIBLE AND CORRECT WRITING OR COMPOSITION SHOULD BE SUNK INTO AUTOMATIC OR UNCONSCIOUS ACTION. This is freedom of thought manifestation through written

language. The first demand is that the expression should be perfectly legible and accurate, the second is that the least possible attention should be given to mechanical execution; third, the expression should keep pace with the thought. Whatever trammels the expression of thought absorbs that mental power which should be concentrated upon the thought itself. Thought expression in all its forms, making, drawing, gesture, oral and written language; reacts directly upon the thought expressed. If the expression be incorrect or bad, the result of the reaction will have a tendency to degrade the thought. If written expression be developed entirely, as it should be, from the standpoint of thought-evolution, then legible and accurate composition will react upon the thought expressed in the direction of clearness, definiteness and distinctness. Expression should always be used as a means of thought-evolution, and never as an end in itself. If this fundamental principle be followed, it will be seen that written language, as a means of conveying thought will reach its highest point of legibility and accuracy, although these are secondary to and the means of mental growth. It cannot be urged too strongly that when written expression becomes automatic, it should be perfectly accurate in all its elements; for slovenly penmanship, misspelling, incorrect capitalization and punctuation, and imperfect English, will with most persons, sink with the written expression into life habits.

CAN THE SKILL OF AUTOMATIC AND ACCURATE WRITTEN THOUGHT-EXPRESSION BE DEVELOPED IN ALL CHILDREN, and how long will it take to do this grand work with the average child? All children of fair intelligence and physical strength, can be trained into this skill so far as the pencil, slate and lead are concerned, in three years from the time they enter school at six years of age; and following this, two years' more training will give them the same command of the pen. This claim does not seem so wonderful when we consider that every child's oral expression, up to the limit of his thought-power, is automatic; and whatever defects he has in talking, with the exception of organic defects, are acquired entirely by imitation. Now, it is proposed to train the child to express thought by writing, by precisely the same method by which he learned to talk, with this very important exception: that in school he shall never have an opportunity to imitate an incorrect form.

Let us look for a moment at what the result contemplated means; for a high ideal gives courage to execution. No matter how imperfect the first attempt may be, a strong belief that the ideal can be reached makes perseverance, realization. It means that every lesson learned, every thought evolved may be as readily and easily put upon paper as uttered by the tongue. It also means a vast deal more. It means that every step toward the result is taken by the steady and connected evolution of thought; making, reading, spelling, writing, capitalization, punctuation and correct English are a united means of teaching arithmetic, geography, history and science. It means that precision and accuracy, the basis of æsthetic culture, will be formed into fixed habits. From first to last the pupils' hearts and hands will be filled with real, genuine and interesting work—work that will make them free—a consummation devoutly to be wished and worked for.

TO ACCOMPLISH THIS RESULT TWO THINGS ARE NECESSARY: First, a wise plan thoroughly adapted to the conditions of child growth. Second, *everlasting patience and perseverance* in execution—a patience and perseverance that will stick to one thing until it is done. The unity of the work gives all the variety that a child's heart desires. This "sticking" does not mean dryness and weariness, for each step gives the freshness and vigor of new thought and improved execution. The plan briefly outlined in the September and October numbers of THE PRACTICAL TEACHER makes *sentence-writing* the great objective point. The pupil is to be trained into the mental power of picturing instantly and unconsciously the correct form of the sentence, which he associates with the thought to be expressed, and of putting that thought upon paper with the minimum of conscious effort.

THE GREAT DANGERS LIE IN FUTILE EFFORTS TO MAKE THE CHILD EXPRESS THOUGHTS WHICH ARE NOT IN HIM, OR TO FORCE HIS POWER OF EXPRESSION BEYOND HIS IMMEDIATE SKILL OF ACCURATE EXECUTION. Open to the child every avenue of expression: talking, writing, making, drawing, music, and keep the thought up to the expression and the expression co-equal with the thought. Then expression will have its highest and best reaction upon thought, and will be at the same time an infallible measure of mental growth. The desire for quick results is the slough into which many good teachers fall. Little children can be made to do seemingly wonderful things in

a very short time, and in such doing, can form habits which are eradicated with the greatest difficulty. The little ones can be made in the first grade to write page after page of their own composition, and by such writing to fix bad habits of writing, spelling, punctuation, and capitalization.

Another danger lies in the inertia, or, to speak plainly, the laziness of the teacher, who allows a great deal of imperfect work to be done because he or she has not the time (?) to watch carefully every bit of the pupil's work. Many teachers have charge of from fifty to sixty beginners, and therefore cannot find time to do much work well. This is a genuine and almost insuperable difficulty. Thirty-five pupils of the lowest grade are enough for any teacher. *At any rate, do a little and do it well.* It is a great extravagance of time and power, whatever the difficulties may be, to do work poorly. Not a few teachers can justly claim that the demands of the authorities above them make good and thorough work very difficult if not impossible. The coming examination puts a high premium upon ephemeral superficiality. "If I do not do this work, I shall lose my place," comes with a despairing voice from thousands of school-rooms. The bread-and-butter brigade will never march from their intrenched camp, hence the hope of progress rests with those who take the higher law of doing right because it is right, and who bravely leave their fate to eternal justice.

WE WILL SUPPOSE THAT THE HABIT OF WRITING SENTENCES HAS BEEN THOROUGHLY FORMED. (See October number, page 19.) THE NEXT STEP IS TO WRITE CONNECTED DESCRIPTIONS. Place a picture or an object before pupils, and have them ask and answer questions by writing. This seems to be the easiest step from sentence-writing. A demand to ask questions, fixes attention. Lead pupils to ask a great variety of questions by noticing the best questions, or saying, "Isn't it better to ask some other question?" "I know a good question." "There is one question that no one has asked." Shall these questions be asked in some definite, prescribed order? The so-called logical development of a subject, is the great enemy to spontaneous growth. I have seen teachers make very dreary business of language teaching, by trying to force a description in logical order. Quiet, steady leading will reach systematic description in good time, but forced logical order soon disgusts children, and turns a pleasure into something like pain. There are those who believe in *pain;* the writer does not—only as a dreadful necessity. The plan of asking and answering questions may be profitably pursued for a few weeks.

HAVE PUPILS DESCRIBE A SERIES OF CONNECTED ACTS. This is a proper sequence of the description of simple actions. Have two or three pupils go out of the room and plan some little scene, and then come into the room and act it. Just as soon as they are through, have them write a description. Let the teacher perform a series of connected acts. Have pupils describe what they did on their way to school, or at recess. Tell me how your mother makes bread; how the blacksmith shoes a horse; how the farmer plants corn; how you wash your face? This will lead to skill in describing processes. Encourage pupils to visit shops and manufactories, and then to write descriptions of what they saw.

DESCRIBE PICTURES.—For this purpose have a large collection of pictures of all kinds. (See page 20, October number.) Give each pupil a picture, and have him write descriptions. Have him name the persons in a picture, and write a story suggested by the scene. This is work that all children love to do—that is, all who have the power developed by previous training.

CONTINUE THE STUDY OF ELEMENTARY SCIENCE BY HAVING PUPILS WRITE DESCRIPTIONS OF NATURAL OBJECTS. Generally have them paint or draw the object first. Of this, more anon. For this work the directions given in the October number, pages 20 and 21, should be followed, with this exception—let them describe the whole object at one writing without interruption, except to erase mistakes. *Remember that the main purpose is not writing, but observation.* The pleasure of writing receives its highest stimulus from the joy of discovery. This plan of object-teaching is much better than the old one of foreordaining what a child shall see and say in fifteen minutes, in a few new words, elastic, transparent, and in a number of sentences mostly made by the teacher, regardless of everything but the result. One great advantage of writing in this manner, over oral expression, is, that in talking a few leaders generally do all the seeing and most of the saying, while the rest of the class follow, sheeplike, after. In writing, however, each pupil must see and say for himself, thus aiding in the solution of that very important question, how shall we reach the individual through the mass?

[*To be continued in the next number.*]

IDEAS BEFORE WORDS IN ARITHMETIC.

W. W. SPEER.

Each topic in arithmetic is usually presented in such a manner that its relation to the preceding one is not shown. Each subject and each subdivision of a subject stands by itself. This arises in a great measure, from teaching the language of arithmetic instead of arithmetic. As long as language usurps the place of thought little progress will be made in this branch, for language is the dress and not the substance of the thing sought.

In the following I shall try to show (1) that the difficulties in arithmetic would disappear if the subjects were presented in their natural order, and one subject were used to interpret another; (2) that when you *know* number you know fractions, and when you know fractions you know percentage, and (3) to present a method which can be used to advantage in developing clear ideas of number, fractions and percentage.

If the reader will, in each case, look in the subjoined diagram for answers to the questions I shall ask, the things which I wish to establish will be seen to be true, otherwise they will not.

The area of the above diagram is four square inches.

I wish to show that the relation of the two square inches to the four square inches is the same as the relation of two fourths to four fourths, or of fifty per cent to one hundred per cent. If this be true, the relations of one will be comprehended as readily as those of the other, unless the learner be perplexed by the language.

Let us compare two square inches of the diagram, two fourths of it, and fifty per cent of it, with the diagram itself.

Two square inches and two square inches are how many square inches?

Two fourths and two fourths are how many fourths?

Fifty per cent and fifty per cent are how many per cent?

Two two square inches are how many square inches?

Two two-fourths are how many fourths?

Two fifty per cents are how many per cent?

Four square inches less two square inches are how many square inches?

Four fourths less two fourths are how many fourths?

One hundred per cent less fifty per cent are how many per cent?

In four square inches there are how many two square inches?

In four fourths there are how many two fourths?

In one hundred per cent there are how many fifty per cent?

One-half of four square inches are how many square inches?

Two fourths of four fourths are how many fourths?

Fifty per cent of one hundred per cent are how many per cent?

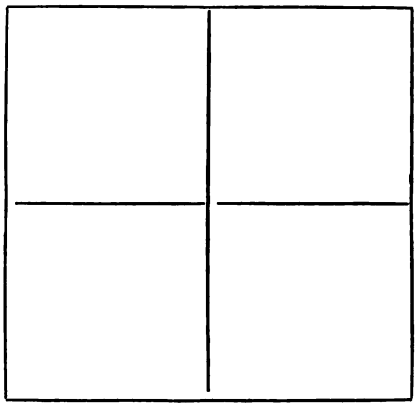
The five operations indicated above are fundamental. This fact is generally understood, but it is considered of no special importance in itself; hence the science which deals with the how many and the how much has been more or less obscured by engrossing the attention of the student in the study of a cloud of meaningless symbols, consisting of figures, rules, and definitions. It is the old story of trying to become wise by somebody else's wisdom.

The following are things that may be seen in the diagram; and the seeing of them may assist in confirming the theory that there is no real difference in the relations to be seen in number, fractions, and percentage:

Two square inches and two square inches; one half and one half; fifty per cent and fifty per cent; three square inches and one square inch; three fourths and one fourth; seventy-five per cent and twenty-five per cent; one square inch and one square inch, and one square inch and one square inch; one fourth and one fourth, and one fourth and one fourth; twenty-five per cent and twenty-five per cent, and twenty-five per cent and twenty-five per cent.

The following miscellaneous questions may serve to suggest to some a method of dealing thoroughly with number and quantity. In answering the questions, observe the diagram. In

the problems in multiplication, do not multiply the numerators together for a new numerator, nor the denominators for a new denominator; and, in division, do not invert the terms of the divisor, and proceed as in multiplication. Interpret the language of the problems by observing the diagram. The fundamental mistake in teaching number, fractions, etc., is in the beginning to take it for granted that the pupil will see the relation through the language, and in not presenting the things in which the relation may be seen:



In a surface two inches long and two inches wide, how many square inches?

What is the difference between two square inches and two inches square?

What is the difference in the distance around a figure one inch wide and four inches long, and another figure two inches in each dimension?

One square inch is what part of four square inches?

Two square inches is what part of four square inches?

One-third of three-fourths of four square inches is what part of four square inches?

What part of three-fourths of four square inches is one-half of four square inches?

One square inch is what part of three-fourths of four square inches?

In one-half there are how many one-fourths?

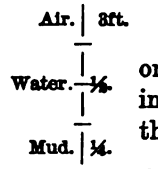
In three-fourths there are how many one-halves?

Three-fourths less one-half of one-half are how many one-fourths?

If twenty-five cents is one-fourth of the cost of a book, what did it cost?

If one-third of three-fourths of a stick of candy cost one-fourth of a cent, what will a whole stick of candy cost?

If an apple cost one-fourth of a cent, how many can you buy for one-half of two cents?



One-fourth of a pole is in the mud, one-half in the water, and three feet in the air; how many feet are there in the water?

Twenty-five per cent is what part of a hundred per cent?

Fifty per cent is one-half of how many per cent?

What part of seventy-five per cent of four square inches is fifty per cent of four square inches?

Twenty-five per cent is what per cent of seventy-five per cent of four square inches?

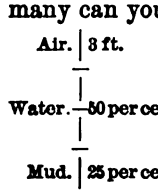
In fifty per cent there are how many twenty-five per cents?

In seventy-five per cent there are how many fifty per cents?

Seventy-five per cent less fifty per cent of fifty per cent of four square inches are how many twenty-five per cents?

If twenty-five cents is twenty-five per cent of the cost of a book, what did the book cost?

If an apple cost one-fourth of a cent, how many can you buy for fifty per cent of two cents?



Twenty-five per cent of a pole is in the mud, fifty per cent in the water, and three feet in the air; how many feet are there in the water?

NUMBER AND ARITHMETIC.

YOU HAVE FOUND OUT BY THE MOST CAREFUL EXAMINATIONS just what each child knows of number; that is, just what limitations by ones your pupils can easily and readily make, and what they know of the relations of the numbers in the largest number they can mentally grasp as a whole. Now begins the real work of teaching number. We will suppose that your pupils know three; then begin with four.

USE ALL THE OBJECTS POSSIBLE IN TEACHING A NUMBER, THAT ARE OF IMMEDIATE PRACTICAL USE TO CHILDREN. Keep this truth distinctly and fully in your mind, at whatever stage of number or arithmetical teaching your pupils may be: all knowledge of number is absolutely founded upon the limitations of things by ones, and that these limitations MUST be made by the learners for and

by themselves. These limitations by ones must be made at first with objects, after which they can be made without the presence of objects, but the mental object is precisely the same with or without objects. Either the objects themselves must be before the learner, or the subject-objects so clearly in the mind that the presence of objects are not necessary to the right mental action. In the latter case the presence of objects *weakens mental action.* (For kinds of objects see pages 23 and 24, October number.)

SUGGESTIONS FOR TEACHING FOUR.—*The number as a whole.* Teacher—Show me four blocks, four shells, four pebbles, four shoe-pegs, four leaves, four flowers, four animals, four lines (in forms), four sides, four corners, four squares, cubes, triangles, oblongs, edges, pictures, panes of glass, trees, bushes, fingers, boys, girls. Have pupils make inch, foot and yard measures out of pasteboard or wood. Have them hold a foot measure in one hand, and draw parallel lines a foot long on the blackboard. Have them draw four vertical, then four horizontal and four oblique lines, testing lengths with their measures. Draw one line four feet long and test it with the foot rule. Do the same with the inch measure. Have pupils make inch and foot squares out of pasteboard or wood, and draw them as they did the linear measures. Draw four squares in an oblong; make longest sides horizontal; make them vertical. Make the sides equal (a square). Have pupils arrange the square inches in different forms by drawing them.

FORM, COLOR AND NUMBER may be taught together, to great advantage, in teaching number. Paper-folding is an excellent means of teaching form, color and number at the same time. Directions for this will be given by Mrs. Alice Putnam in the next number of this paper. Use linear, square and cubical measures at every step. It is a good plan to have all the geometrical forms made in wood and variously colored. Have pupils show four blue cubes, four red squares, four yellow triangles, four green oblongs, four red rhomboids, four orange balls or spheres.

TEST THE SENSE OF HEARING by rapping four times on the table, stamping four times, tapping a bell four times, etc. Have pupils do the same. Test the sense of touch by having pupils close their eyes and taking fours of things from the table. Have pupils find fours of objects around them, in nature and art. They will discover that a dog has four legs; a wagon, four wheels; a pane of glass, four edges; etc.

WHEN A DISTINCT CONCEPT OF FOUR IS IN THE MIND BEGIN THE ANALYSIS. Teacher—Tell me what you can find in four. (Different kinds of objects should be on a table or desks.) Pupil—I see two blocks in four blocks. Teacher—Show me the two blocks that you have found in four blocks. Teacher—How many twos can you find in four blocks? It is difficult to imagine the answers of children. They may be very slow in saying, "there are two twos in four." Teacher—How many twos have I in this hand? Pupil—One two. Teacher—How many twos on the table? Pupil—One two. Teacher—Now, how many twos are there on the table? Pupil—Two twos (perhaps). When a child discovers the twos in four, what has he discovered? $4 \div 2 = 2$; $2 \times 2 = 4$; two 2s $= 4$; $4 - 2 = 2$, and he can easily infer that $\frac{1}{2}$ of $4 = 2$. Teacher—How many twos did you find in four blocks? Find two twos in four shoe-pegs, four squares, four marks on the board. Make four marks on the board so that I can see the two twos. Draw four birds. How many twos make four? Show me with lines, squares, cubes, etc. Who can say two twos another way? Pupils—Two and two are four (perhaps). Teacher—If I had two cents in one hand and two cents in the other how many cents would I have in both hands? Teacher—Sarah, please take four beans, and give Mary two beans, how many beans have you now? Give Sarah what you have; how many did you give her? How many has she now? Find something else in four. Facts in four, $4 \div 2 = 2$; two 2's$=4$; $4 - 2 = 2$; $3 + 1 = 4$; $4 - 3 = 1$; $4 - 1 = 3$; $\frac{1}{2}$ of $4 = 2$. The facts, $4 \div 2$ (twos in four) and $\frac{1}{2}$ of 4 are identical in the minds of many teachers. Children will never confuse these two decidedly different operations, if the teacher does not. They probably know one half of four. Teacher—Give me one half of four blocks; give me the other half; how many halves have I now?

GIVE PUPILS A GREAT MANY LITTLE PROBLEMS and have them make problems for themselves. Teacher—Who has a question, or who will be the teacher? For reviews. Teacher—Show me all you can do with four blocks. Tell me what you have done. What can you do with four squares? Be very careful about the language. Do not force new and unintelligible idioms upon them. You may use the new terms and idioms yourself, but allow the pupil to tell what he does in his own way.

(To be continued.)

A VISIT TO GERMAN SCHOOLS.

Notes of a professional tour to inspect some of the Kindergartens, Primary Schools, Public Girls' Schools, and Schools for Technical Instruction in Hamburg, Berlin, Dresden, Weimar, Gotha, and Eisenach, in the Autumn of 1874, with critical discussions of the general principles and practice of Kindergarten and other schemes of elementary education by Joseph Payne, author of Payne's Lectures upon the Science and Art of Teaching.

VISIT TO HAMBURG.

My first visit was to the noble institution which goes by the name of Gewerbeschule für Mädchen (Girls' School for Technical Instruction), established by a voluntary society for the promotion of women's occupations (*Verein zur Förderung weiblicher Erwerbsthätigkeit*). The stately building —a beautiful specimen of architecture—was opened for use in December, 1873, and is now a complete hive of busy bees. I regret that I have no time to describe it in detail. I can only say that I have never seen an establishment of the kind—hardly of any kind—in which the arrangements are so complete. The twenty-five class-rooms (adapted to the accommodation of 750 students), lofty, spacious and admirably ventilated "by the best American system, which has not before been applied on the continent," appear to be everything that could be desired, while the apparatus for heating in winter is as complete as that for ventilation. The arrangements have in view instruction not only in the practical arts of washing, ironing, cooking, sewing with needle and machine, cutting-out and general housekeeping, but also in geometrical and free-hand drawing, lithography porcelain painting and burning. But this is far from all: the establishment contains (1) a high school for girls who have passed through the upper classes of the ordinary school. Here instruction is given in the German language, arithmetic, book-keeping, physics, geometry, etc. (2) Classes for the training of kindergarten teachers. (3) A kindergarten for children of from three to seven years of age, open from 9 to 1.* This is the merest outline of the broad features of a very remarkable institution which well deserves the attention of those who are now interesting themselves in the question of finding occupation for women, and who sometimes appear to forget the preliminary question of preparing women for occupation. Nothing is more certain than that one of the great difficulties in finding employment for women is in finding them competently equipped for undertaking it. I have Miss Emily Faithfull's authority, as well as that of others, for making this assertion. Miss Faithfull is besieged daily with applications for work from women who do not know what work is, nor how it should be done so as to be worth paying for. The object of the Hamburg institution is to train women for doing good work, which must always have its value in the market.

Having taken a general view of the institution under the bright and intelligent guidance of the head-mistress, Frau Dr. M. Glinger, I stayed behind in the beautiful rooms given up to the kindergarten.* I saw nothing afterward at all comparable in fitness for their purpose to these rooms, so lofty, large, airy, and full of light. There were three long, low tables, with forms corresponding, and at these were seated what seemed a mere handful of children (there were only fifteen) busily engaged not in feeding their minds, but their bodies. It was just past eleven, and they were taking what was called their breakfast, which they had brought with them and which consisted of bread (possibly with butter on it) and milk—each one being supplied with a plate and jug. When this slight refection, which could not have burdened the system much, was over, they rose up to march and sing, all looking very rosy and happy. Marching to the beat of the songs they sang (*Tritt und Gesang*) was, I found in all the kindergarten, a frequent occupation of the children; and a very noticeable feature of this exercise was the accuracy with which it was generally performed. Sometimes it consisted merely in stepping one after the other with a single beat of the foot; at other times it was varied by an accented stamp thus:— | | ▌ | | | ▌ | | | ▌, etc.; but I noticed that in all cases the measure was well preserved. There can be no doubt that this is not one of those bodily exercises "that profit nothing." It stirs the blood, animates the whole

* The reader will observe in the fact that kindergartenism is adoped as an important—rather *the* important—basis of instruction in this grand institution,—a noticeable testimony in its favor. The founders and supporters of the *Gewerbeschule* and of the *Verein* are persons deeply interested in education, who, in providing for the training of kindergarten governesses, and in establishing a kindergarten, commit themselves, of course to the recognition of its principles.

* I extract from the report of the institution a paragraph which represents in a few words the theory and practice of the kindergarten system. "The purpose of the games and occupations of the kindergarten is the harmonious development and cultivation of all the intellectual and bodily powers of the child. They lead him to become conscious of those powers, and to make use of them—to exercise the eye in the observation (*Anschauung*) of suitable forms, the hand in works which he performs as plays, the ear through simple melodies which delight him, the understanding through stories, narratives and games which rouse his attention and fix in his mind accurate (*Vorstellungen*) and general concepts (*Begriffe*). Lastly in his intercourse with his little companions he learns to become happy, sociable and peaceable (*heiter, gesellig, und verträglich*)."

system, and dissipates the tedium liable to arise from much sitting, and is in every way adapted to the powers of the children. It was evidently very popular. About the singing of the songs I shall have something to say afterward.

After a few minutes thus employed I was invited to be present at an artistic little melodrama (*Bewegungspiel*) entitled the "Maüselein" in which all the children except one held hands and enacted "butter," "cheese," "bacon," "cake," etc. The child in the middle of the ring was Master Maüselein (*i. e.* mouse), who went about touching (which was taken for tasting) the different articles of food—for which indulgence he had to pay dear in the end, being at last caught in a trap formed by some four or five of his companions, amid the rejoicing of the whole party. This little drama of action was dexterously performed, and seemed a favorite with the children, as I witnessed it twice afterward at other kindergartens.

On a second visit to the kindergarten, I found the mistress (a very kind, earnest, and intelligent young lady) telling the children the story of a lion, in which they were intensely interested, listening with staring eyes, half-open mouths, and brows almost sternly wrinkled. When the story was done, the teacher asked a few questions upon it, which were promptly and eagerly answered. One little child was on the teacher's lap during the time; but in none of the kindergartens that I saw were any arrangements (such as we sometimes meet with in our infants' schools) for the sleeping of the children. Everywhere they were decidedly wide awake.

At both these visits I saw also something of the training of the young kindergarten teachers by the head-mistress, Miss H——. In the first instance I attended a lesson given to about twenty-six young girls (ages fourteen to twenty), neatly dressed, very orderly and attentive, and rather superior in air and manner to some that I saw elsewhere. The lesson was a geometrical form, which some of them drew (not very cleverly) on the blackboard. As it is the essence of Fröbel's theory to build everything on the concrete, I was rather surprised that no actual solids, which would have shown the origin and relations of geometrical forms, were before the class. Such bodies had, perhaps, been already palpably examined. Still the lesson was decidedly interesting, from the earnestness displayed by both teacher and pupils. I was struck here and in other teachers' classes with the absurd number of rings worn by the girls. I may also here remark that it occurred to me that these girls, many of them not more than fourteen or fifteen years of age, begin their direct training for governesses far too early. I heard of no indispensable previous general culture, at least nothing beyond a sufficient school instruction (*eine genügende Schulbildung*); and as the training for the kindergarten lasts generally only one year, during which nearly twenty-four subjects are to be taken up,* it is easy to see that many of the teachers must be turned out in a very crude condition. This remark may perhaps have a special and limited application, but of the principle involved I have no doubt. As in the case of our own pupil-teachers, so here, it seems to be assumed that immature and unformed minds are competent, after a little technical drill, to take upon themselves the training of other minds, especially those of very young children; whereas the truth is, that the highest artistic skill cannot be thrown away, nay, rather is required, in the earliest stages of a child's development, if the foundation is to be surely and firmly laid. In the interesting prospectus of this very institution it is clearly laid down (see second note), that "the purpose of the plays, games, and occupations of the kindergarten is the harmonious development and cultivation of all the intellectual and bodily powers of the child—to lead him to become conscious of those powers, and to make use of them," etc. I quite approve of this programme of the objects in view, but I am at the same time convinced that a year's training for a girl of fourteen years of age cannot possibly prepare her to carry it out; and I am further of opinion that for fourteen years of age seventeen ought to be substituted. Up to this latter age the general education of those who are intended for teachers ought to go on without interruption. This is one of the weak points which lie open to the attacks which afterward, at Berlin, I heard made upon the system. It is, indeed, idle to talk of "the harmonious cultivation of all the intellectual and bodily powers of a child," if the carrying out of this very comprehensive programme is to be left in any appreciable measure to girls of four-

* I append the somewhat extraordinary list of "Subjects of instruction in the one year's course":—"The German, English, and French Languages, Home Knowledge (*Heimathskunde*), Arithmetic, Geometry, Physics (*Naturlehre*), Natural History, Elementary Physiology (*Lehre von dem menschlichen Körper*), and the Laws of Health (*Gesundheitslehre*), Drawing, Singing, Gymnastics, Needlework (*Handarbeit*); the Art of Educating and Instructing (*Erziehungs und Unterrichtslehre*), Training in the use of the Fröbellian Appliances, Practical exercises in the Kindergarten." Prodigious demand, assuredly on the intellectual energies of one year! even though in certain cases (*in gegebenen Fällen*) instruction in foreign languages and *Handarbeit* is dispensed with.

ten or fifteen after one year's teaching. Now it is just in proportion as the demands of Fröbel's theory are provision must be made for its realization. Up to the time of the exposition of his views, there was no theory to work up to. Now there is, and in order to realize it, much more than has yet been done. I speak in a general way; more is done to secure for a accomplished teachers. On my second visit to the training classes I found the young teachers engaged in gymnastics, still under the personal direction of Miss E——. I was pleased with their graceful rhythmic movements, governed by the music of a piano, and accompanied by singing. They were thirty-five in number, some few of them probably over thirty years of age. They went through various evolutions, winding in and out among each other in a way which was very pretty and picturesque. They also used with success and skill staves and wooden rings.

This lesson was followed by one in singing. First the young ladies sang the "Elementarl" from a collection of songs by Karolina Wasmuder of Brunswick, respecting whose system of teaching music I everywhere heard great praise expressed in Leipsic. Then came some pretty songs among them a very pretty one called "Frühlingslied", and lastly, exercises in scales and intervals from a book by Tuge. These exercises were, on the whole, the most satisfactory part of the performance, inasmuch as they showed the possession of the power of singing at sight. The notes were well held, and even difficult passages were gone through with much apparent ease.

During my stay in Hamburg, I visited for the whole of one evening from hours the great school for working-men and boys. The Allgemeine Gewerbeschule, which is under the sole direction of Mr. Otto Jessen, who is also the director of the Gewerbe school for women. As my attention was exclusively given during this visit to the drawing department, and as I had no opportunity of returning to the school, I can only give a few particulars. It is an institution for the teaching, in classes carried on both by day and evening, as well as on the Sunday morning, men and boys of fourteen and upward, all those branches of instruction which have a bearing on their actual or intended employments for life. The programme is most comprehensive, embracing the German and English languages, arithmetic, algebra, geometry, trigonometry, book-keeping, physics, *chemistry*, architecture, drawing of every kind, modelling in clay and wax, lithographic drawing, etc., all of which are taught with their application to practical life and business. The number of students was, in the summer of 1873, nine hundred and eighty-seven; in the winter of 1873–4, one thousand three hundred and sixty-six. The school is founded and sustained by grants from the municipality of Hamburg, together with a small contribution provided by the fees of the students. This same liberal-minded municipality has voted a sum of 800,000 thalers (about £130,000) for the building of a new school-house, now rapidly approaching to completion, with which are connected a Lecture-hall and a Trades Museum. When shall we have half-a-dozen such institutions in London?

The drawing department of the institution is, by general acknowledgment, second to none in Germany. For my own part, I had never seen anything approaching it in completeness and extension. The special point of interest to me was, that drawing was taught from beginning to end through the training of eye and hand in connection with real objects. There is enough at the close of the course, in copying from drawings, and the teachers do so in part of the work for the pupils. Wooden blocks of different forms are used to begin with, and not only the outline as presented to the eye was drawn in strong lines on the paper, but the outlines of the parts not seen were estimated by measurement with the eye, and traced on broken lines, as if the object was transparent. These blocks were placed in all possible positions, and drawn over and over again. Then followed other objects—earthenware vases, plaster reliefs, parts of machines, whole machines, articles of furniture, etc. Then there was pattern-making, designing, drawing in lithographic stones (an extra hour being devoted to this), modelling in clay of leaves, etc., water-color drawing, etc. Specimens of all these different kinds of art were produced under my eyes during my visit, and the marked excellence throughout could only be attributed to the method pursued, essentially consisting, as it did, of keeping close to the object before the eye, and without trick or sham of any kind, representing it as accurately as possible. It is a noticeable feature, that high finishing is not allowed in the time of instruction. If the student wishes to add the grace to his work, he must do it at home. The practical, the useful, thus connected with trades and occupations alone, is encouraged in this very remarkable school. The accomplished director himself accompanied me in my visit to the several class-rooms, and gave me,

through the kind interpretation of Professor Wiebe, who was with me, every explanation.

Altogether, the two *Gewerbeschulen* interested me exceedingly. They are noble institutions. I saw nothing anywhere else to match them. Nor is this remarkable, inasmuch as they are the first of their kind, both in chronological order and in excellence, in Germany.

[*To be continued.*]

BREATHING EXERCISES.

FRANK STUART PARKER.

1st. Stand in military position, weight upon the balls of the feet.

Place the hands as high and as far back as possible at the turn of the ribs, relax the side muscles (withdraw the energy) and press the ribs forward. Immediately throw them forcibly back to position. Knead the ribs from the extreme upper portion to the lower or floating ribs and repeat.

The purpose of this exercise is to make more flexible the cartilage between the sternum and the ribs. Upon the elasticity of this cartilage depends the lateral enlargement of the cage in which the lungs are imprisoned.

In taking this exercise, withdraw the energy from the muscles that move the ribs, letting them remain passive during the pressing forward of the ribs.

2d. Stand in military position. Place the hands as high and as far back as possible at the turn of the ribs. Send out the breath in a sigh. Inhale *slowly* and audibly through a small aperture in the lips, the sound produced being the consonant f. Let the rib-muscles that pull open the rib cage remain passive during this exercise, and slowly fill the lung. Having inhaled all the air possible in this position, lift the shoulders and inhale until the lungs are completely filled. Retain the breath for ten seconds, using, if need be, effort; resist the inclination to expel the air immediately, for the object in this exercise is as much to gain control over the breath-impelling muscles of the thorax as to enlarge the air cells, and every surrender to the inclination renders this more difficult. The time of holding the breath is to be gradually increased to thirty or forty seconds, but begin with *ten*, or even *five* seconds, and *gradually* increase time of holding. *Very slowly* exhale through a small aperture in the teeth, using the consonants sh (as in shall). Repeat the above movement, omitting the sigh, but not as thoroughly as at first, the inhaling, holding and exhaling taking less time; inhale through the nostrils, exhale in a sigh and resume ordinary breathing.

Practice the above but twice a day, in the middle of the forenoon and the afternoon, but repeat the exercise each time. Never practice a breathing exercise within an hour before or after eating. If this rule be not observed, indigestion is almost sure to be induced by breathing exercises. See that the room is well warmed and well aired, for the breath is taken through the mouth, partly for the purpose of regulating the escaping breath by the ear (the pupil listening and so determining the impelling force), and partly because it is easier for the pupil to regulate the aperture when inhaling through the mouth, than when inhaling through the nose. There is no danger in this if the room is ventilated and warmed, for the stream of air is so slight that it is thoroughly warmed and moistened before reaching the lungs. A glass or rubber tube is excellent and perhaps safer on the whole to inhale through. In cases of weakness, or of undeveloped air cells, physicians often order these tubes; they can be obtained at any drug store. A goose quill, after passing a shawl pin through the nib, will answer every purpose.

Here impress upon the children the necessity of keeping the mouth closed and of breathing through the nostrils when running and in the cold winter air. The air when passing through the nose is brought nearer the temperature of the lungs, warmed and moistened, and the delicate membranes of the lungs are not chilled. Half the colds, lung fever and pneumonia could be prevented were we careful to keep the school-rooms cooler, better ventilated, and the children's mouths covered or closed upon first going out into the frosty air.

3d. Place the hands upon the floating ribs just above the waist line. Relax the muscles of the waist and press slowly inward. Follow this by throwing outward the side muscles, willing the muscles to make this lateral movement and not accomplishing it by action of the breath. Imagine that you have on a tight belt and try to burst it. Be sure that the movement outward is a gradual and steady one. Repeat this exercise three times.

Purpose—to give strength and flexibility to the side muscles, they playing an important part in determining the force of a tone.

4th. Place the hands in the same position as in No. 3, and expel the breath from that point; immediately inhale, expanding the sides against the hands. Repeat three times.

Purpose—intelligent direction of the breath, the use of the muscles of the thorax determining the force of tone, the voice being soft or loud, pathetic or cold, broken or firm, as those muscles are relaxed or energized.

5th. Place the tips of the fingers at the waist just below the sternum and between the floating ribs, the thumbs extended to the sides. Impel the breath through a small aperture in the lips from this central point, the sides remaining passive, the action of the diaphragm being inward as the breath is sent outward. See that the chest does not fall during this exercise, and repeat three times.

6th. Active chest followed by passive chest. Place one hand upon the chest, the other upon the abdomen, and lift the chest directly upward; very slowly depress it without the inhaling or exhaling of the breath.

The chest represented by *c*, the abdomen by *b*.

$$\text{Thus: } \frac{c}{b}$$

You raise from *b* and give to *c* in the active chest, from *c* and give to *b* in the passive chest. Be careful during this exercise to stand in the military position, perfectly erect, and not to throw out the abdomen by bending the back.

7th. Stand in military position. Place the tips of the fingers upon the chest just below the collar bone, and with the chest in a normal condition count five slowly, with considerable force, seeing that the chest is immovable during the counting.

8th. Position the same as above, inhale an ordinary breath through the nostrils, and walk about the room counting mentally on one breath as many as possible before the chest begins to fall. Stop the moment there is the slightest depression.

Many other exercises could be mentioned, but these properly given will be sufficient to accomplish what is desired, namely, development of the air cell, control of the breath-impelling muscles, and strength and elasticity of the various tissues, cartilages and muscles of the thorax.

Were all school-rooms properly ventilated, were all teachers thoroughly instructed in hygienic principles, were all children healthy and active, breathing exercises would not be [illegible]. But unfortunately for the children, edu[illegible] have so persistently fixed their attention up[illegible] development of mind [illegible] mind alone, tha[illegible] have lost sight of it in [illegible]tion with a body [illegible] the improper *educatio*[illegible] children, together [illegible] improper dress, whi[illegible] breathing [illegible]

necessity. A dog, upon first awakening, always stretches himself and yawns vigorously. A baby does the same. A child of two or three years after watching with absorbing interest some wonderful revelation of the outer world, heaves a deep sigh and expands its tiny breast as if to throw off the weight of care which solving the mysteries of creation has laid upon it. "Children of an older growth," pursuing some shadowy phantom of an idea through the deep caves of thought almost suspend the breath during the operation, the first act upon capturing and *securing* the vagrant image being to fill the depleted lungs as fully as possible, and to assume a position in which they can most easily perform their function. Attention, interest, study, reflection, purely intellectual effort, all have a tendency to make the act of respiration less vigorous, and to induce a position of body which cramps the lungs. Such being the case, the teacher should see to it that the child alternates his occupations and drills in such a manner, that a position which is detrimental to the health not only of the body, but of the mind as well, is not induced, a position which the world over is known, when fixed by habit, as the "student's hump." One would suppose that a fact so common as that of the natural desire of the lung to fill itself with air after having been, for any cause, deprived of the accustomed supply, would be well understood by teachers, but I mention the above because I have seen children in primary schools, after close attention to the work demanded of them, punished for doing what nature absolutely demanded that they should do in order to keep their little bodies in a sound, healthy condition.

Another point to which I wish to direct the teacher's attention is that of dress. If the clothing in any way confines waist muscles, and the breathing must perform be either diaphragmatic or abdominal, let the breathing exercises alone. *On no condition* practice them in tight clothing, the bursting of a blood vessel or serious organic disturbances being the result where the above directions are not observed. The crying need among school children is for suitable dressing—dressing that shall not confine the arms, chest, waist, legs or feet. It is an absolute necessity, if we look to the best good of the child, that the limbs and organs during growth should not be cramped or confined in any way. Development of body and grace of movement depend entirely upon freedom in so[illegible] not a high linen collar or a linen, confine[illegible] tight sleeves that prevent freedom of [illegible] compress the chest and waist muscles

with buckram, weight it with a blanket, and finish by putting tight shoes upon its feet, and then watch its graceful gambols (?) and congratulate yourself upon your perception of and conformity with God's unalterable laws as exemplified in his wonderful creation, the animal body.

PSYCHOLOGY.

Are you conscious of color, form, number, and relations? Are they distinct things in your consciousness without the presence of objects? Can you think of color without form? Of form without color? Of number without a number of things? Of relations without the things related? Words are signs of ideas; what are ideas? How many kinds of ideas have you found in your mind? When you see a familiar object, how do you know that you have ever seen it before? What, in the mind, causes an idea to be recalled? When an object recalls an idea, what is the first effect of seeing the object before the idea is recalled? When you think you recognize Mr. Jones, and find that you are mistaken, that it is Mr. Smith, for example, what is the psychological cause of the mistake? In this case do you compare two things in the mind? What do you compare? If you find you are mistaken, was the mistake one of perception or of judgment?

PEDAGOGICS.

DEFINITIONS OF FUNDAMENTAL OPERATIONS IN ARITHMETIC.

Multiplication is uniting a number of equal numbers.

A multiplicand is one of the equal numbers to be united.

A multiplier is a number of equal numbers to be united.

A product is a number of equal numbers united.

Division is separating a number into a number of equal numbers.

A dividend is a number to be separated into a number of equal numbers.

A divisor is one of the equal numbers into which a number is to be separated.

A quotient is the number of equal numbers into which a dividend has been separated.

Partition is the separation of a number into equal parts.

A dividend* is the number to be separated into equal parts.

A divisor* is the number of equal parts into which a dividend is to be separated.

A quotient* is one of the equal parts into which a dividend has been separated.

*NOTE.—The terms dividend, divisor and quotient are not the proper ones in partition; new terms should be invented.

Subtraction is the separation of numbers into two numbers.

A minuend is a number to be separated into two numbers.

A subtrahend is one of the two numbers into which a minuend is to be separated.

A remainder is the number found by separating the minuend into two numbers.

Addition is the uniting of numbers.

A sum or an amount is the numbers united.

These definitions are presented for study. Our readers are invited to point out the mistakes they may find, and state why they are mistakes.

ANSWERS TO CORRESPONDENTS.

COL. F. W. PARKER:

Dear Sir,—I have just taken charge of a small school here, and wish to introduce the Grube number method, for a year at least, in the primary grade. It is somewhat objected to, and I received word from an old and well-known Iowa superintendent, who has had the credit of indorsing the "new education," that it is "no longer followed in our best schools." What is the status of the Grube method in the best schools of the country to-day where it has been tried? Do you believe it superior to other methods, and, if so, how far should it be pursued? If pursued, should operations with numbers to 10 occupy a year?

Grube, like all discoverers or inventors, was not the real or first discoverer of a method of teaching number. He forced the issue, and so got the fame of discovery. Böhme, a normal teacher in Berlin, used essentially the same method before Grube's book, *Leitfaden für das Rechnen in der Elementarschule,* was published. The device of Grube contains two essential elements of teaching numbers, one of which *must* be followed, the other should be. 1. The fundamental knowledge of number must be obtained from numbers of things—that is, objects must be used if number is taught. Figures *can* be taught without the aid of objects—that is, without numbers of things. The second essential element of Grube's device is the fact that the five fundamental operations, addition, subtraction, multiplication, division, and partition, should be taught when a number is taught—for example, in teaching six: 1+5, 6—1, 6—5, 2+4, 6—2, 6—4, two 3s, three 2s, 6÷3, 6÷2, ½ of 6, ⅓ of 6, may be far better taught together than by teaching addition for some and following

it with subtraction, multiplication, etc. The five things taught in teaching a number are:

1. The equal numbers in a number.
2. The equal numbers that make a number.
3. The equal parts of a number.
4. Any two equal or unequal numbers in a number.
5. Any two equal or unequal numbers that make a number.

The criticism I make upon Grube's device is in the fifth statement. He teaches (5) any number of unequal numbers that make a number—for example, instead of simply teaching the combinations, 1+5, 2+4, 3+3, in teaching 6, he would teach 1+2+3, 4+1+1. Now, if any two unequal numbers that make a number be known, then the combination of more than two numbers must also be known, and should be presented as review or test work. Another criticism is that Grube carries the complete analysis and synthesis of number too far. All the essential facts are learned by the proper teaching of number up to and including 20; after that the number of facts to be learned may be greatly lessened. I think that very many of the teachers in this country have adopted the essential principles, of which Grube's device is a partial exponent. I have never known ten to be properly taught in one year.

NEW YORK, October 3, 1884.

COL. F. W. PARKER:

Dear Sir,—How soon after entering school would you introduce writing with pen and ink? Yours truly,

PRIMARY TEACHER.

I have hitherto begun the use of pen and ink in the second or third grades. My theory is that skill in making letters and words should precede pen movement. When this is done, the entire attention may be given to pen movement. After pupils have command of form, and when they can make a smooth line on both nibs of the pen, form with the pen will take care of itself. Pupils should be trained from the first to use the shoulder and forearm movement alone. In making letters with the pen, they should never be allowed to use the finger movements. In Cincinnati and many other places, pen-writing is used from the first, with, I am told, good results.

VARNA, October 9, 1884.

COL. F. W. PARKER:

Dear Sir,—Will you please give me your opinion as to having Webb's sentence-builder supplemented by the script form? Respectfully, PRIMARY TEACHER.

Any device of this kind will help, after script has been well taught. Mr. Webb is entitled to a great deal of credit for pushing the word method in this country.

COL. F. W. PARKER:

Dear Sir,—I am teaching in an ungraded school; have fifty pupils, and one fifth of them are beginners. How can I keep these employed? I have them write the words which they learn, count, etc., but they tire of this. Can you give me some suggestions? I have received help from your "Talks to Teachers," and from your supplementary readers. I have a large amount of work to do, as my advanced grade have some of the higher branches.

This problem of how to keep the little folks at work in an ungraded school is very difficult. "The new methods are not suitable for country schools" is often heard. It seems to me, after some years of experience as a country school teacher, that the so-called new methods are admirably adapted to such schools. Writing furnishes an almost exhaustless means of busy work. Drawing another. Molding in clay, stick weaving, number work, if properly directed, will give the little ones plenty to do. They tire of work only when it is poorly done. Give them good copies, always notice their work, and encourage them to try again. The following list of things to do, for busy work, was made out by a committee of the Cook County Teachers' Institute, 1884:

1. Making designs out of assorted sticks, splints, shells, shoe-pegs, and other familiar objects, and drawing the same.
2. Tracing outlines of pictures cut from books and papers by teacher; removing copy and finishing picture.
3. Making designs by means of tooth-picks and soaked peas.
4. Having cubical blocks with faces full of holes, and letting pupils make designs in these with shoe-pegs or tooth-picks.
5. Arranging dissected maps and picture puzzles.
6. Weaving mats with paper slips and straws.
7. Stringing colored beads and balls in groups of twos, threes or fours.
8. Molding in clay and sand.
9. Paper-folding and perforating work.
10. Matching colors.
11. Making paper dolls.
12. Drawing original pictures on slates, paper or black-board.
13. Grouping geometrical forms.
14. Card-board cutting.
15. Building sentences by means of words printed on card-board.

THE PRACTICAL TEACHER.

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FRANCIS W. PARKER, EDITOR.

Honest investigation and a courageous application of the truth when found.

NUMBER AND ARITHMETIC.

LANGUAGE OF ARITHMETIC.—In my experience, teachers find the greatest difficulty in teaching number, not in the numbers themselves, but in the language of number. The source of all mistakes in teaching is in making *expression*, the end and aim of teaching, instead of *thought*. Thought power is the center around which all reform in teaching must revolve, as all mistakes have revolved around making expression the one thing sought. The first great point for the teacher is to know exactly what the child should think. The foundation of all thinking in arithmetic is to be found in a thorough comprehension of what number is, and just what can be done with numbers. Take blocks or other objects, my dear teachers, and sit down with these questions. The definitions in the November number may aid you. What do I really do when I add, substract, multiply, divide and part numbers? The actual *doing* will tell you and nothing else.

That which confuses students most, in this search after truth, is the definitions, rules, and generalizations they have already learned. Teach children words before ideas and the words ever after stand between the mind and thought. Ask yourself what is division? and instead of answering with words, actually divide with objects. What is the difference between $8 \div 2$, and $\frac{1}{2}$ of 8? Show this with objects. By a little close thinking, with the aid of objects, you may find that you do not know just what you have long supposed you did know. Now, if the language of arithmetic is not clear to you, what must it be to a six-year-old child when you foist that language upon him before the thought is clear. The teacher who, in preparing her lessons, thinks thoroughly, with the aid of that with which she wishes her pupils to think, will rarely make a bad mistake. Ignorance demands generalizations, wisdom demands insight and the steps to the generalizations. Question every day of your lives the thing you think you know the best, and especially question that which you try to teach.

IF THINKING IS YOUR MOTIVE IN TEACHING, you will allow the child to associate with his thoughts, words and idioms that he has already learned. Before you teach "*times*" in multiplication, know just what multiplication is, and then ascertain the exact relation of "times" to the process of uniting equal numbers. *Take* a number of blocks, say four blocks, three times; actually *take* four blocks *three times*. Surely you will need only four blocks to take four blocks three times. And what is the result? Three times four means three fours. Write on the blackboard three times four books, and have your pupils (grammar grade) show you what the expression means. It means three fours. Does it mean anything else? Then, why not say three fours, four fives, etc.? You may say, Why not say "times" if pupils understand it? Do they understand it? That is the question.

In taking a book from the table you do not take the table. Take a chair from the floor, and the floor remains. Take four from eight and eight *does not* remain. The child never uses "from" in this sense until he learns the language of number. What does the child say when he separates eight objects into four and four? Ask the child in the right way (lead him to the thought) and he will tell you just what he thinks in his own language.

THE LANGUAGE OF NUMBER NEEDS TO BE REVISED.—"Times" should be dropped in multiplication. "From" should not be used in subtraction. A fraction cannot be multiplied by a fraction. A fraction cannot be divided by a whole number. Length cannot be multiplied by breadth. A number can be "taken" as many times as there are units in another;" but the "taking" is not multiplication. "Four and four," "three fours," "there are three fours in twelve," "one third of twelve is four," are per-

fectly intelligible expressions, but four *from* eight, or eight less four, is not so clear. Subtraction does not necessitate a "taking away" any more than division. Division is the separation of a number into equal numbers; subtraction is the separation of a number into two equal or unequal numbers. In division the number to be separated and one of the equal numbers must be known; in subtraction the number to be separated and one of numbers must be known. What must be done to find the result, *i. e.* the quotient or the remainder? What words will exactly describe the operation? What words have the children, whom you teach, with which to describe what they do in numbers? A close investigation of these questions will lead to some very important results. *Finding* the result, and not *the* result, is valuable. The child should express in his own language just what he has done. He will never say "divided by," "multiplied" or "subtracted," until he has been taught to do so. How should these forms of speech be taught? Precisely as all oral words and idioms have been. The child, before he entered school, by first getting the idea or thought in his mind, and then gradually associating the new word, phrase or sentence with the idea or thought until the thought recalled the words, and the words the thought, learned to use words to express thought. "This is taking a great deal of pains for a very little" I hear some teacher say. If you examine pupils in upper grammar grades and find that they do not know just what each arithmetical expression means, how can they think by means of such words? And if these words are powerless to bring up the right thoughts, of what use is the study of arithmetic to them?" It is the careless primary work that makes real teaching in upper grades so difficult. I wish each teacher who may read this, would test pupils of grammar grades with these sentences, written on the blackboard:

3×4 marks. (Read three fours of marks.)

Teacher—Show me this example in marks upon the board. Show me the multiplier, the multiplicand, the product (in marks, not figures).

12 marks $\div$ 4 marks.

Teacher—Show me by marks what this sentence means. Show me the dividend, the divisor, the quotient; which is the greater, the dividend or the quotient. Draw a line around the dividend; now draw a line around the quotient.

$\frac{1}{4}$ of 12 marks.

Teacher—Make 12 marks on the board. Show me what $\frac{1}{4}$ of 12 marks means. Draw a line around the answer, $12 \div 4$ marks equal 3. $\frac{1}{4}$ of 12 marks equal 3. Which is the greater, 12 marks $\div 4$ marks or $\frac{1}{4}$ of 12 marks?

12 marks — 8 marks.

Teacher—Show me the minuend in this sentence, the subtrahend; the remainder.

Teacher—Show me with objects $\frac{1}{6}$ of $\frac{1}{2}$ of 12. $\frac{1}{2}$ of $\frac{1}{4}$. $\frac{1}{2} \div \frac{1}{4}$. 25 per cent of 4 sticks. $3 \div \frac{1}{4}$.

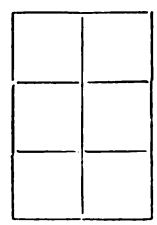
Place the questions very clearly before the classes you examine, but do not help them one whit. The teacher who seeks words always explains; the teacher who seeks thought never does.

IDEAS BEFORE WORDS IN TEACHING ARITHMETIC.

(Continued from November number.)

W. W. SPEER.

In $\frac{1}{2}$ there are how many $\frac{1}{3}$s? In what manner did you arrive at the result? Did you invert the terms of the divisor and proceed as in multiplication, or did you see instantly one and one half $\frac{2}{6}$ in $\frac{3}{6}$? If you arrived at the result by inverting the terms of the divisor, you did not see the relations of the fractions at all. You followed blindly the direction of a rule. You secured the result by manipulating the symbols of fractions instead of seeing the relations of the fractions themselves. This method develops no power to think. It makes the pupil a slave to a mechanical process. It trains the habit of accepting that which is not understood. It fosters dependence instead of independence, weakness instead of strength. The pupil must acquire a knowledge of fractions in the same way that he did a knowledge of numbers, that is, by comparing them, by studying their relations. In $\frac{1}{2}$ and $\frac{1}{3}$ he must see at once 3 of the six equal parts and 2 of the six equal parts. He must see that $\frac{1}{2}$ and $\frac{1}{3}$, $\frac{3}{6}$ and $\frac{2}{6}$, are just as real and can be just as clearly conceived as \$2 and \$3. When the ideas of which $\frac{1}{2}$ and $\frac{1}{3}$ are the symbols are clearly and distinctly imaged, he will perceive their relations as readily as he will the relations of 2 and 3. Let us verify this, by observing the following diagram:



You see that $\frac{1}{2}$ is 3 of the six equal parts, and that $\frac{1}{3}$ is 2 of the six equal parts. Now let us express,

in the language of fractions, all of the relations of these fractions. You observe, that $\frac{1}{2}$ and $\frac{1}{3}$ of the diagram equal $\frac{5}{6}$ of it; that $\frac{1}{2}$ less $\frac{1}{3}$ equals $\frac{1}{6}$; that in $\frac{1}{2}$ there are one and one half $\frac{1}{3}$s ($\frac{1}{2} \div \frac{1}{3} = 1\frac{1}{2}$); that $\frac{1}{2}$ of $\frac{1}{3}$ equals $\frac{1}{6}$; that $\frac{1}{3}$ of $\frac{1}{2}$ equals $\frac{1}{6}$; that $\frac{1}{3}$ equals $\frac{2}{3}$ of $\frac{1}{2}$; that $\frac{1}{2}$ equals $\frac{3}{2}$ of $\frac{1}{3}$.

In the November number of THE PRACTICAL TEACHER, I endeavored to show that if number be thoroughly learned, there is nothing new to learn in fractions, except the language. I again call attention to this, for, if it be true, it is of the utmost importance that *number* be well taught.

Place before you six objects. Suppose them to be six squares.

You see that $\frac{1}{2}$ of the six squares are three squares; that $\frac{1}{3}$ of the six squares are two squares. Let us compare two of the six squares with three of the six squares, and discover if we can that there is a difference in the relations existing between two of the six squares and three of the six squares and between the $\frac{1}{2}$ and the $\frac{1}{3}$ of a parallelogram separated into six equal parts.

Two of the six squares and three of the six squares are five of the six squares. The difference between three of the six squares and two of the six squares is one of the six squares. In three of the six squares there are one and one half twos of the six squares. One half of two of the six squares is one of the six squares. One third of three of the six squares is one of the six squares. Two of the six squares are two thirds of three of the six squares. Three of the six squares are three halves of two of six squares. Have you discovered any difference except a difference in the language? If not, why allow children to waste their time in seeking for that which has no existence? Why confuse and discourage them by leading them to think that in the study of fractions they are entering upon a new and difficult task? If you clearly perceive the identity of the relations of such expressions as $\frac{1}{2}$ and $\frac{1}{3}$, 3 and 2; $\frac{1}{3}$ and $\frac{1}{4}$, 4 and 3, and teach number, from the beginning, with this truth in mind, your pupils will perceive, without difficulty, the relations of fractions through the power they have gained in the study of number. They will see in the operations of fractions simply continued practice in verifying the truths they discover and in acquiring mechanical skill. The relations of all the fractions used in ordinary business transactions should be discovered by the pupil himself. They should not be told to him. It is self-activity that educates. It will not be necessary to urge upon you the necessity of following this principle if you are fully persuaded that you really know only those things which you discover for yourself. In studying the relations of fractions, as well as in studying other relations, a child is incapable of comparison until, through sense perception, it has gained ideas to compare. It cannot arrive at results which will be of any real value faster than it perceives the relations of the fractions dealt with. In no branch of study will the effort to force expression be more disastrous than in this. All attempts to make the child accept your conclusions, instead of deducing its own, or to make mechanical skill the antecedent instead of the subsequent of thought will retard rather than promote mental growth.

PAPER FOLDING AS A MEANS OF TEACHING NUMBER.

MRS. ALICE H. PUTNAM, KINDERGARTNER, COOK COUNTY NORMAL SCHOOL.

In order to teach the child to limit object by any given number (let us take the number *three* for an illustration), we will place conspicuously about the room, several groups of objects—three boxes, three apples, three balls (red, blue and yellow), saying, however, *nothing* about these groups.

Have ready a quantity of triangles (sides to measure four inches), cut from red, blue and yellow glazed paper. That known by dealers as "common medium" is cheaper, but if any stress is to be laid on *color*, better colors can be found in glazed paper. These triangles can be found already prepared at any kindergarten supply store, but they are more expensive than need be, for the paper bought by the quire can be easily cut.

Give the children each three papers, one of each color, and let them see how they can arrange them. One child will perhaps inclose a triangle, or John may perhaps say, "I have three tents." Then let the children describe the situation, for example, John says, "I have placed my red tent

between the blue and yellow ones. The blue one is on the right hand side of the red tent," etc.

Teacher—What do we call this place on the paper (pointing to a corner, indicating merely position)? The children name it, and *find other corners,* for it is important that the child should see that his special object is a type or representative of *other* objects, that any particular fact or truth gained belongs to a larger series of truths.

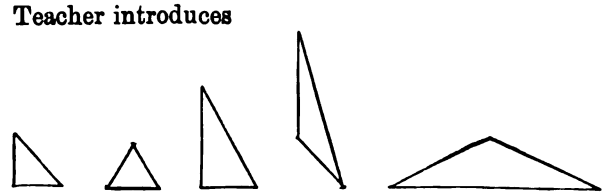
Teacher—How many corners can you find on your red paper? On the blue one? On the yellow one? Pupil—There are three corners on my red (blue or yellow) paper. Teacher—How many times can you find three corners? Pupil—I can find them three times. Teacher—How many threes has Carrie? Pupil—I have three threes. Teacher—Who can find three chairs? Who will show me three things? Mabel finds three balls, etc.

Teacher—Now, lay aside all of the colors except the one you like best, and let us place this one so that this part (edge) is even with the front of your desk. Show me the corners nearest to you. Show me the one the farthest from you. Show me the edge nearest you. Who can find some edges elsewhere? How many edges? Find something in this room with three edges. How many right and left edges (on one paper). Pupil—One right and left edge (horizontal). Teacher—How many slanting edges? Sum up for children, or rather help them to do so, 1+1+1 edge = 3 edges. 2 edges +1 edge = 3 edges. 1 edge +2 edges = 3 edges. Now let us see who can find the corners in front? How many? Pupil—There are two in front. Teacher—How many at the back? Pupil—There is one corner at the back. Teacher—How many all together? Sum up as before. Cover one corner with your hand and tell me how many corners are left uncovered. Pupil—3 corners — 1 = 2 uncovered. Teacher—Now, cover *two* corners and tell me how many you can see. (3 — 2 = ?) Now cover three corners and tell me about those that are left. (3 — 3=?)

Teacher—How many times can you find three corners? Pupil—I can find them just once. (Only one paper is in use.) Teacher—In your red paper, how many one cornor can you find? Pupil— I can find three one corner. Teacher—How many two corners can you find? Pupil—I can find two corners, but there is one left over.

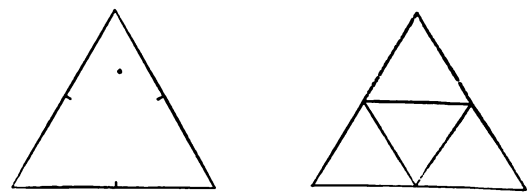
Teacher—Now who can tell me how long these edges are? (Children measure all of the edges.) Pupil—They are four inches long. When the edges are all alike we can say they are equal, and when the corners are all alike we can say the *corners* are equal.

Teacher—What did we call those forms we had last week, which had three corners and three edges? Pupil—They were triangles. Teacher—Is this like the triangle we had at that time? (Compare equilateral and isosceles triangle.) In what are they alike? Pupil—They have the same number of corners and edges. Teacher—Are the corners alike (in size)? Are the edges alike? Show me the triangle in which the corners and edges *are* alike. Now, so that I can know which of the two you mean, this triangle or the other, must have separate names. They both belong to the triangle family, but the name of this one  is "right angled triangle" (it has a *middle* name, too), and *this* one  has only two names, *equilateral* triangle. It is like having a good many children from one family in school: if the last name is Smith, we want to know whether it is John or Willie or Mable, who has our book. So we must give each child his own name. There is quite a number of the triangle family coming to this school, and we must learn to know them apart. We *do* know the two who have come. I believe I will draw the likenesses of the whole family, and after a while you will know their names. Teacher introduces



only naming the two which have been used.

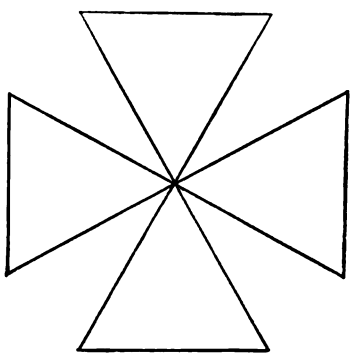
Now place your paper so that its white face shows. I want you to make a very small mark with your thumb nail, *exactly* in the middle of each edge of the triangle. Keep one of the edges toward you. Now fold the back corner

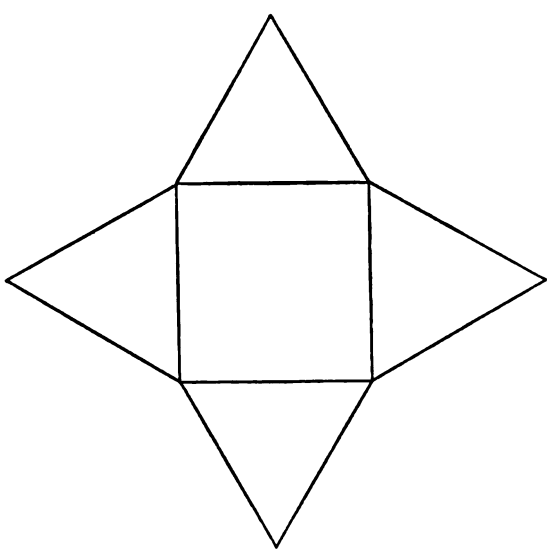


(wait for them to find it) to the middle of the front edge. This must be done accurately. How many triangles do you see now? Pupil—Three triangles. Teacher—Tell me about the color. Pupil—There is one red one, and there are two white ones. Teacher—Find some red tri-

angles for me. Children look for them in room. Fold the right hand white triangle over the red one. The left hand white triangle over the red one. Now look at yours and look at mine, and tell me something about them. The fact of the color and form of the two being alike, will be in the child's mind UNCONSCIOUSLY, and in all probability, the difference in size will be the first thing of which he *is* conscious. At least I think that it will be the first thought which he expresses. Measure both again, find all points of resemblance *first*, of contrast afterward.

Open your papers and bring the edges and points of the small ones together. Children will probably call it a "three-sided tent." This gives the tetrahedron. This is good, for when analyzed it will bring the child face to face with the next number to be taught. For busy work, the children could cut and paste these small triangles, draw them on blackboard in various relations, etc.:





color them with crayons or paints (keep a little book for such work, pasting, etc): make them in clay or sand, sew them.

In giving these forms I should not, unless the child were rather dull, or lacked interest, say anything about *what* we were going to make. The enjoyment and surprise of the little people, in seeing the symmetrical form grow, according to the law of its formation, is always great. Telling them what they are about to do, excites them more, and this stimulus is *sometimes* necessary. But if they can be led to trust and obey the teacher and his demands in these things, a habit of trust and confidence in the guide grows, which is of great importance. Then, again, the telling beforehand has a tendency to make the *result* the grand thing rather than the work itself. It is true they must have an end in view, but as they *do* the work, they see the thought. It seems to me that with most American children there is a tendency to an overflow of thought and feeling into channels which other people have dug for them, or they themselves have made shallow, instead of deep, by this very act of overestimating the result. The plan of having the children work and wait, will bring its own reward, and lessen the danger of superficial work and nervous excitement.

[*To be continued.*]

LANGUAGE.

"Why do you fill THE PRACTICAL TEACHER with suggestions for primary teachers, and do not help us teachers of the grammar grades?" is a cry that reaches the door of our sanctum.

Because the principles and methods of primary teaching are just as thoroughly adapted to the teaching of college students as to the smallest child; principles and methods are the same for all grades; the objects of thought change with growing power.

Because principals and all upper grade teachers should master the art of teaching little children. We cannot know thoroughly a part of our work until we know the whole. The roots of a scientific knowledge of education are found by studying the beginnings.

Because, in my experience, a greater part of all the real difficulties of grammar grade teaching, spring from imperfect teaching and training in primary grades. "But," you say, "what must be done with those pupils who have been poorly taught in lower grades? We cannot wait until the better taught children come to us; what shall we do with these?"

The question is an exceedingly serious one, I frankly confess, and a very difficult one to face.

The difficulties are mainly not of methods; the trouble is deeper than that. Bad teaching, going over the work without understanding it, learning empty words, and passing examinations by writing them, cultivate a fearful conceit, which, coupled with the inordinate desire of parents for the promotion of their children (generally the greatest hindrance), is an immense obstacle to reform in grammar grade teaching. Add to this, demands from school boards and superintendents, for uniform examinations, and the well-known sentence of Herbert Spencer may be easily understood: "Having, by our method, induced helplessness, we straightway make helplessness a reason for our method." You find by actual examination that your pupils, given the simplest subject, cannot write a page of English correctly. It may be that they have parsed, analyzed and diagrammed for one, two or three years. My first advice is to drop very quietly the teaching of technical grammar until they *can* write English easily and correctly. Do not tell your pupils that they are dull and stupid, and must go back to primary work. Such a mistake would weaken your influence. Call the new work composition or rhetoric, for it is both. You can gradually make them feel the great defects in their work, after they have failed many times to write with accuracy, and have been brought face to face with their difficulties. By this course their conceit will be diminished, and their appetite for real work and real thinking improved.

The plan I would have you follow has been given substantially in the preceding numbers of THE PRACTICAL TEACHER. The first aim should be to write sentences with absolute accuracy. A few rules may bear repetition. Strive from first to last to prevent all incorrect spelling, punctuation and capitalization. Write on the board in large letters, "Never spell a word incorrectly; if you do not know how a word is spelled, find it in the dictionary." Write also very plainly a few simple rules for the use of capitals and for punctuation. Keep your pupils up to their best work in everything; never allow any careless writing. A teacher's influence is photographed in every line made by her pupils. Do not correct the writing after it is done, *but while* it is being done. Look over your pupils' shoulders and notice quickly the slightest mistake or inaccuracy.

THE SUBJECTS FOR SENTENCE WRITING SHOULD BE ADAPTED TO THE MENTAL CAPACITY OF YOUR PUPILS. After a lesson, ask the pupils to write one thing they have learned. When you are sure the first sentence is accurately written, have them write another, and another. Following this plan, has given teachers, to my knowledge, some startling results. If pupils write what they have verbally memorized, ask them to write the same thing in another way. You will find that if repetition of words has been the purpose of your teaching, that pupils will reproduce words; if thinking is your aim, then original expression will follow; thus a teacher may learn by this kind of sentence-writing quite as much as her pupils.

READ A SHORT STORY, and have pupils write, *sentence by sentence,* what they have heard. In the first steps of this work it is a good plan to use slates, so that the slightest mistake may be erased. Watch the writing of each pupil, sponge in hand, to erase errors. "Try again." One sentence, accurately written, is worth pages full of mistakes. Most mistakes are the results of careless habits. Bend all your energies straight toward the correction of such habits. Stop, in a reading lesson, and ask pupils to write one sentence about that which they have read. Such demands will drive pupils to closer thinking when they read. Sentences are very often verbose. The principal cause of verbosity is loose, superficial thinking. Erase such sentences, and request pupils to write them better. It may be well to write on the board a long, disjointed sentence, written by a pupil, and have the whole class reduce it to good shape and terse language. The doubtful thing about this is found in making a pupil's work ridiculous.

THE STUDY OF HISTORY furnishes an inexhaustible quantity of composition writing, providing that you teach *history* and not *words.* For the first steps, follow the same plan of sentence-writing as in teaching reading. Have pupils write one sentence correctly before they attempt to write another. Your aim is to have pupils write an entire lesson or topic, but work up to this desirable end *very slowly.* You may begin by asking pupils to write one thing that they remember of the lesson. When a pupil has done this correctly, let him write one more fact, and so on. Have pupils read what they have written. Do not trouble yourself, at first, about the order of the descriptions. After pupils have studied a lesson, ask them to write five or six questions upon the lesson. Allow those pupils, who have written good questions and have written them correctly, to ask the questions. Follow this by having them ask and answer ques-

tions by writing. One pupil can ask his questions; when a question has been answered, request him to read his own answer. Frequently write questions on the board for pupils to answer in writing.

OF ALL STUDIES COMMONLY PURSUED, GEOGRAPHY presents the most opportunities for language-training. Verbatim learning of definitions and descriptions reduces these opportunities to the minimum. There can be no profitable language-teaching without the stimulus of original thought. Every sentence learned verbatim is a lost opportunity of evolving thought and teaching language. It will be the dawn of a millennium for children when teachers comprehend this. Learning empty words closes eyes, ears, and hearts. That is why we, my dear teachers, are so hard-hearted as to cram our pupils with husks, when the bread of life fills every nook and corner of the universe. If truth has a soul, it must long to be known, and laughs in the heart of the child who finds it.

If things cannot be described from realities—hills, mountains, valleys, bays, capes, and promontories—have them described from models or pictures. Let pupils write the descriptions with the least possible assistance. In oral descriptions, the slow pupils generally imitate the quicker ones, losing thereby opportunities to think.

Have pupils mold in sand, clay, or putty, a relief map of North America. Then place the molded map before them for written descriptions. The teacher, alive to the slightest mistake, watches pupils as they talk with their pens, and, as I so often have said, never allows a second answer to be written until the first is correct. Questions to be written on the board, or given orally. Pupils must get all their answers from the relief map. Tell me one thing about the coast of North America. What is the difference between the eastern and the western coasts? The northern and the southern coasts? Which coast has the most indentations? Tell me one thing about the western coast. One about the eastern coast. How many highlands are there in North America? Where are the highlands? Tell me one thing about the western highlands? Two things. Where does the western highland begin and end? The eastern highland? Bound the western highland. The eastern highland. What is the difference between a highland and a range of mountains? Can there be highlands without mountains? Draw a highland without a mountain. Compare the eastern and western highlands. Tell me one thing in which they are alike. Two things. Tell me one thing in which they are unlike. Two things. How many plains do you find in North America? Which is the largest? Bound it. Where is one great river? Why is it there? A few questions will serve to show what is meant. You say, "This is teaching geography." Yes, and it is teaching writing, spelling, punctuation, capitalization, and correct English at the same time.

I HEAR OBJECTIONS from all sides: "I haven't time for such work." "I must hear twenty or thirty recitations a day; how can I watch my pupils as you say?" Supposing you hold a series of examinations of this kind, and set all your pupils, large and small, to work answering questions, or describing objects with their pens and pencils? Give different work to different classes. Arouse a great ambition to do perfect work. Collect specimens of the best work and have them on exhibition. Never show a paper with the slightest mistake in form upon it. Haven't time! Take the time given to memorizing words, to oral spelling, to technical grammar, to correction of papers, and put it into "learning to do by doing." Haven't time!! It is a tremendous economy of time both for teachers and pupils to have pupils do accurate work. You can leave them alone when this is done, and hear recitations in peace. Pupils love to do beautiful work; perfection is always beautiful, and they will respect you profoundly for the training. When children are doing good work, order "keeps" itself.

A WORD ABOUT THE CORRECTION OF PAPERS.—This sanctum becomes dim with flickerings of midnight oil, as I think of manuscript correcting and corrections.

> "Look, look, look, till the eyes are heavy and dim,
> Mark, mark, mark, till the brain begins to swim."

What are its wages? Does it pay to cover page after page with notes of correction? Is the next paper enough better to pay for such wearisome labor? If it does, go on. If not, stop it. Would not the close, steady and prolonged following of the plan I have outlined in this and former numbers of THE PRACTICAL TEACHER render unnecessary this severe and tiresome work? I have already said that most of the mistakes in form are due to nothing but sheer carelessness, carelessness trained into pupils; train them into habits of carefulness and how much drudgery might be saved. *Never allow pupils to spell a word wrong; if they*

do not know it, train them to know that they do not know it. The same rule should be followed in punctuation and the use of capitals. Thank heaven! that children cannot be trained to talk as they are trained to write; here is one comfort. If it could be done there would be a general resort to the language of gesture.

[*To be continued.*]

LESSON GIVEN BY MISS MAUD KINDAR.

VERBATIM REPORT BY MISS T. E. COFFIN, PROFESSIONAL TRAINING CLASS, COOK COUNTY NORMAL SCHOOL.

Teacher places before class a live frog, saying—Look at it, see what you can, and then think how to tell me what you see. Ethel—I see its eyes, they are large and far out on its head like the rabbit's. Frank—Its eyes are yellow and black, and almost on top of its head. Sophie—I see a golden circle round its eyes. Ethel—The black part of the eye is shaped like an egg, and the outside yellow part is round like a wheel. Frank—Look at his eye now, he does not shut it, but when he goes under water a blue skin comes up and covers it over. Emily—When you hold him under water his eyes go down in his head. Helen—The front legs are not as long as the hind legs. Frank—His front legs bend in. Teacher—Do they? Place your arms as his legs are. Each pupil tries to place his arms in such position. Emily says—His legs bend out like my elbows and his feet bend in like my hands. Sophie—His feet are not like ours, for he has only four toes and we have five. Helen—And his big toe points backward.

SECOND DAY.

Teacher—Tell me what we talked about yesterday. Ethel—We learned about the frog's eyes and his front feet. Emily—Teacher, did you feed that frog since yesterday? I did not, but I think it was fed. Frank—I would like to know if that is the ear just back of his eye? Class—Yes, yes it is. Sophie—It is round, and is brown around the outside. I see a line running around the eye and then under the chin. Ethel—I see its nose, the nostrils are on the face just above the mouth. Helen—Its mouth goes from one ear to the other. Teacher holds its mouth open. Frank—I see its tongue, it is white. Teacher—Look again at its tongue. Frank—It is fastened down in front, and I see some little white things that look like teeth. Helen—The frog looks as if it had pimples all over its back and it has black spots on its legs.

l—It has a lump on its back that looks just like a little hill. Rudolph—It has webs between its toes. Teacher—What are these for? Class—So it can swim. Teacher—What color is it? Emily—It is green on top and white under, it has a black stripe down its back. Ethel—I see it breathing; it breathes like my turtle, you can see its neck moving. Teacher—Would you call that its neck which is moving? Class—No, it is the floor of its mouth. Helen—I can see its sides move when it breathes. Teacher holds frog up. Ethel says—The thigh is much larger than the leg below the knee.

This to be followed by a reading lesson on the same subject.

CRITICISM OF A LESSON.

BY MISS M. VAN PELT, COOK COUNTY NORMAL SCHOOL.

The class was held by the teacher's interest in work and naturally cheerful, enthusiastic manner

The children were not led to the truth, because the teacher did not know the truth.

The children were not held up to their best efforts, because of the teacher's ignorance of their ability.

Their interest was often destroyed by his explaining that which they could better explain or discover for themselves.

They did not grow, because they did not think.

They were not permitted to think, for, if he demanded thought, he immediately tried to aid them by illustrating

In reading, the thought seemed to be taught by means of the expression. He led them to imitate his expression by telling them they "should read as they talked," often showing them how to do it.

He made it impossible for them to gain the thought from the words by not previously teaching the words. If a child hesitated before saying a word, the teacher asked any one the pronunciation and meaning, thus interrupting the connection of the thought.

BUSY WORK.

BELLE A. THOMAS.

How to keep the little ones busy at their desks is often a perplexing question to the primary teacher.

Busy work should be, not only attractive, but profitable and so arranged that it will supplement and help the work done in recitation. Let us suppose that the new word for to-day's lesson is *basket*. After the object has been talked about,

the word written on the blackboard and used in sentences which are read by the class, they are ready for seat work. First have them copy the word a number of times upon their slates, then draw several pictures from the object itself; next make an outline of the object upon their desks with shoe-pegs and match-sticks. The drawing and stick laying have afforded them change and rest, and they are ready again for the copying. Now have them copy a short sentence containing the new word.

Four periods of seat work are thus furnished, all assisting in fixing the new word learned.

Here is a lesson that was recently given to a class of beginners:

The teacher secured the attention of every child by asking the attractive question, "Would you like a story? Once there was a little boy about as large as Clarence here. His father bought him a new hat. The boy went out in the yard to play. He was driving his hoop when the wind blew his hat off and carried it up into a tree." The teacher waited a moment and then added. "Now you may take your slates and pencils and draw a picture of my story."

Immediately every child was busy at work. After they had worked for fifteen minutes, she looked at their slates. "Yes," she said, "those are good pictures, but I think the trees would look better if they had leaves, and you need a fence around the yard." Again all were busy, and ten minutes more were occupied in following out the last suggestion.

Here is still another occupation which has been used as a review. On slips of paper write the names of objects which they have used with their reading lessons. Give four of these to each child, asking him to draw pictures of the objects which his slips indicate.

QUESTIONS FOR EXAMINATION OF TEACHERS.

WHAT IS ARITHMETIC? Ans. It is usually the science of figures and the art of memorizing them. Ques. How many kinds of arithmetic are there? Ans. Two kinds, mental and *detri*mental arithmetic. Ques. What is the difference between mental and *detri*mental arithmetic? Ans. Mental arithmetic is taught by using numbers; *detri*mental arithmetic by the use of figures alone. Ques. What is an abstract number? Ans. An abstract number is a number of which the human mind is incapable of thinking. Ques. What is the use of an abstract number? Ans. It is the best possible means of preventing a knowledge of arithmetic from getting into the heads of children. Ques. What other means are used to prevent thinking in learning arithmetic? Ans. The abstract number is generally sufficient to muddle the brains of any child; but in case it fails, rules and definitions may be used. Ques. What is reading? Ans. Reading is the art of pronouncing and emphazing words correctly; for this purpose a book may be used. Ques. What is the "New Education?" Ans. The so-called "New Education" is another name for what Emerson calls a "divine discontent." Ques. How does it differ from the old education? Ans. The motive of the "New" is power, of the "Old" word-cram. Ques. Who were the founders of the "New Education?" Ans. Socrates (470 B.C.), The Great Teacher, Bacon, Comenius, Ratich, Rousseau, Pestalozzi, Jactotot, Spencer, Payne and ten thousand others. Ques. Why is it called "new?" Ans. Because it is so extremely "new" to those who oppose it; besides it is the custom to call all much-needed reforms, like civil service, "new." Ques. To what extent is the "New Education" followed in this country? Ans. By taking evidence it is found that most teachers follow it; began it more than twenty years ago; tried it, and it failed; are using it now, but don't like it. Ques. Why do not teachers like it? Ans. Because (see Key*). (NOTE.—$7\frac{11}{100}$ to be taken off for each failure to answer a question.)

A VISIT TO GERMAN SCHOOLS.

(Continued from October Number.)

Notes of a professional tour to inspect some of the Kindergartens, Primary Schools, Public Girls' Schools, and Schools for Technical Instruction in Hamburg, Berlin, Dresden, Weimar, Gotha, and Eisenach, in the Autumn of 1874, with critical discussions of the general principles and practice of Kindergarten and other schemes of elementary education.

BY JOSEPH PAYNE, AUTHOR OF PAYNE'S LECTURES.

VISIT TO HAMBURG.

One day I accompanied Professor Wiebe to see the Pestalozzistift (or, as we should perhaps call it, the Pestalozzian Asylum) at Braberc, three or four miles from Hamburg. In a forlorn, out-of-the-way situation, we arrived at a large, handsome house, on entering which we found ourselves at once in a spacious central hall carried up to the roof, with open galleries continued round each landing. The effect was, on the whole, rather striking. The master, an intelligent-looking man, came forward to meet us, and accompanied us over the building.

*Thirteen questions.

The rooms of the institution are spacious and airy furnished with good solid chairs, tables, and desks. It was near dinner-time and the children were at play. We were told that they were seventy in number—boys and girls—taught together; two thirds of them boys, and generally from six to fourteen years of age. There are no school hours after twelve; then the boys work in the fields connected with the house, and the girls at their needles, or at sweeping, cleaning, bed-making, etc. There are three teachers—all men. After a time the children came in to dinner, all with their hair cut close to their heads, and, the boys especially, notwithstanding their out-door work, looking far from healthy. After they had taken their seats at the table, where each had a chair, one said grace, and the operation of dining commenced. It was a remarkably simple operation. Large wooden tubs filled with boiled rice were brought in by some of the boys, placed before a young woman, the housekeeper, and forthwith ladled out by her into the plates held for it by different elder boys and girls, who take the messes to the several tables. This, without salt or sugar, was their sole dinner; varied we were told, occasionally by boiled beans and peas. Sugar is allowed only on *fête* days. Meat is given three times a week. Some of the children had two or three helpings of rice, but many only one. Breakfast consists of bread and milk, or of grits boiled in milk. Supper of bread and water only. This undelightful and not very nutritious meal was eaten in solemn silence: water, apparently not *ad libitum*, washed down the rice. After the dinner was over we accompanied the master, who offered to show us the dormitories. We found them very clean and airy. The one we entered was furnished with thirty-five iron bedsteads and good arrangements for washing. The children go to bed every night at nine o'clock.

On descending into the hall, we found all the children assembled, and prepared to give us a song. They were in two divisions, and they soon burst out, singing most delightfully in parts "Die Wacht am Rhein." I have scarcely heard anything so sweetly harmonious. I noticed that half-a-dozen of the children ran up the stairs as if with some special object in view. That object was soon apparent. A fresh song was begun, in two parts as before, and at the close of the stanza, echo, with delicious gentleness and sweetness, repeated the last few notes from the top of the house. The effect was truly charming. Poor children! they must have a hard life of it—rice without sugar for dinner, dry bread and limited water for supper, rough work in the fields, and (perhaps) rugged tillage in the school (but this I don't know); and with all this a good master, who, I hope, is gentle with them; but, in spite of everything else, they learn to sing delightfully, and there is some comfort at least in this. I have often since remembered their singing with pleasure, and contrasted the general effect with that produced by much of the singing in the kindergartens, which, possibly from some defect in myself, possibly because ny ear is especially sensitive to tune and harmony, was very often far from satisfactory to me. Time with the kindergarten mistresses and their little pupils is generally a prime consideration, but I cannot say as much for tune, meaning by this the tasteful harmony of sweet sounds.

Singing is an important feature of Fröbel's system, and I do not think it is executed nearly as well as it might be by the little birds of the Kindergartens. Here, as is generally the case in education, it is the teacher who is at fault. The materials are all there, but the teacher fails to make the best use of them. The germs of art, however feeble, are in the native constitution of every little child, and though not always able to struggle of themselves into the light, they can be nursed and developed into power—that is, some measure of power—by the teacher on the outside, if he is himself an artist in education. But all teachers are not artists in education; and this, again, not because they are naturally incapable, but because they are not naturally "informed" and inspired with the pregnant conception that the teacher's function is generative and even creative, and they therefore believe themselves incapable without actually being so. They are unconscious of the powers they really possess, and they are unconscious of their own powers because they do not appreciate those of the children they teach; and lastly, they do not appreciate the children's powers, because they do not study carefully the nature of children. They should go to Fröbel, and learn from him what children are, and what they can do when artistically handled. It is a very important consideration that the product of education, after all, depends mainly on the teacher. The number of stupid children is really very small, but the number of children who are left stupid—that is, of those whose powers are undeveloped—is very great; and this number is mainly dependent on the teacher, with whom it rests very much to decide whether these powers

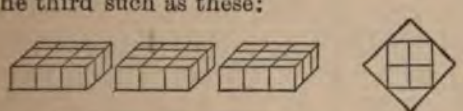
shall be ignored, developed, or stifled. The bad teacher is a *menticide*, who deserves punishment quite as much as the unskilled medical practitioner who is called into court to answer for his delinquencies. Hence it happens that young minds, that might have been quickened into life, remain dead, buried, and forgotten.

I visited in Hamburg some of the "*Bürger Kindergarten*," of which there are, I believe, nine in different parts of the town. In one of them I found several children, a division of whom were busily occupied in constructing various forms, and building with the little cubes of the fifth "gift." The fifth "gift" presents a cube as divided into twenty-seven smaller cubes, and these are divided diagonally into fifty-four half cubes or prisms. Thus considered, it affords opportunity for forming (1) life-objects; (2) beauty-objects; (3) knowledge-objects.

The first class represents such forms as this:

The second such as this:

The third such as these:



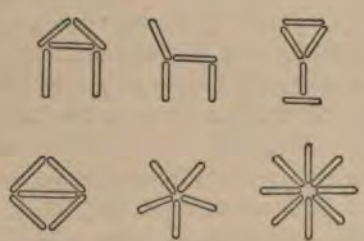
The children were engaged in dealing with forms of the first kind; that is, in building forms of life—real objects. They looked happy in their occupation, though it was carried on under very unfavorable circumstances. The room belongs to a turnverein, which assembles in the evenings for gymnastic exercises. It was bare, rough, and gloomy, while the atmosphere was sensibly impregnated with the lingering fumes of the holocaust of tobacco which had been offered up on the preceding evening. It was, perhaps, a result of the unconscious influence of the surroundings that the teachers here were less kind in manner and tone to the children than was usual elsewhere. As some sort of counterbalance to these disadvantages there was, however, a small yard or garden for the children to play in, and some little disorderly beds of plants and flowers were pointed out to me as the children's.

I may here take the opportunity of saying that Fröbel's notion, that the children of the kindergarten are not only to be regarded as human plants themselves, but also as cultivators of real plants, remains still, for the most part, unrealized. I saw very few gardens at all connected with the institution, and those that I saw were scarcely worth a second glance. They were generally overgrown with sprawling plants, or given up to the dominion of weeds. Nor did I see a single instance in which children were at work in them. Indeed, it is obvious enough that things, in most cases, must be so. In large towns where the system is in vogue, and where, I believe, it will still take deep root and flourish, it is next to impossible to obtain adequate space for the experiments in actual gardening. If, indeed, I may venture an opinion, which will, I am aware, be unacceptable to some of the enthusiastic followers of Fröbel, I should recommend the gradual disuse of the term kindergarten altogether. Interpreted by facts as they are, it has no special propriety. The kindergartens are really preparatory schools for very young children, and nothing else. The methods adopted in them may and do differ greatly from those of ordinary schools, but when these, in process of time, are modified, as they will be, so as to form a continuation of the same system, the name will lose its specialty. A child of six or seven years old is as much a human plant as one of three; and the school, as a place for culture, is as much kindergarten as that which now bears the name. If it is the age only on which the distinction depends, then we have a distinction without a difference. All this will sound very heterodox, no doubt, in the ears of some of the enthusiasts I have referred to; but when they understand that I agree with them as to the value of the thing, they will perhaps tolerate my quibbles about the name. I fully believe myself that, though this foreign name has been temporarily adopted in England and America, neither this nor that of kindergärtner (gardeners) for the teachers will be permanently employed.

Several of the Hamburg kindergartens are under the immediate superintendence of a number of ladies and gentlemen, forming a committee of the Fröbel Verein (a Fröbel Union), the headquarters of which are at Dresden. The ladies of the committee, and the president, who is a Mrs. Johanna Goldschmidt, very kindly take turns in

visiting the schools of the Union; and I could distinctly see the good effects of this care in the character of their special institution. In one of them that I visited there were thirty children—ages from three to seven—paying nearly £4 a year each. The rooms, though not large enough, were commodious and cheerful, and the children, when I arrived, were industriously interweaving strips of colored paper (*Flechten*), which they did very deftly, and with evident satisfaction to themselves. This work consists in plaiting strips of paper, so as to form various designs, the effect depending on the symmetrical arrangement of the different colors. The little workers, armed with needle and thread, draw the slips in and out amongst others already laid down to form the groundwork of the pattern, an exercise requiring much more attention and thought than might at first sight be expected. The following specimen will give some idea of the work:

The children had been engaged, I was told, since nine o'clock in (1) building with cubes; (2) in "stick-laying," or making different forms on the flat table. This consists in placing little sticks (*stäbchen*) in various relations to each other, as this:



(3) In games and gymnastics. While I stayed, there was a good deal of singing, not very well conducted, for the teachers could not be complimented on their own sweet voices; and I invariably remarked that the tone and quality even of the children's voices depended greatly—and for obvious reasons—on those of the teachers.

I observed, on looking out from one of the windows, some little flower-beds, belonging, as I was told, to the children, to which the remarks which I have previously made were applicable. The children altogether looked a very happy little community, earnestly engaged in their occupation, and happy because earnestly engaged. And herein lies one of the great truths which Fröbel brought to light and made practical. He saw more clearly, perhaps, than any one before him, that the secret of happiness is occupation—the healthy employment of our powers, whatever they may be. This is especially true of little children, who are scarcely ever contented with simply doing nothing, and whose fidgettiness and unrest, which often give mothers and teachers so much anxiety, are merely the strugglings of the soul to get, through the body, some employment for its powers. Supply this want, give them an object to work upon, and you solve the problem. The divergence and distraction of the faculties cease as they converge upon the work, and the mind is at rest in its very occupation. The nature of the work makes very little difference, and even its sameness does not weary. It becomes interesting, simply because it gives scope to the energies, and concentrates them. I frequently had occasion to notice that the children were doing over and over again what I knew that they had often done before, and I once inquired whether the teacher did not find that the children got tired of the apparent sameness and monotony. "Look at them," was the reply in this case, "and see whether they appear tired." I did look, and could see no symptom of weariness, but, on the contrary, earnest, contented, even pleased absorption in the work. What more was to be desired? They were observing, comparing, contriving, sometimes inventing, and all the while gaining practical skill in manipulation. They were working toward an end, and I often saw them stop for a moment and contemplate with delight what they had achieved. On one occasion a bright-eyed maiden of two and a half years old, after placing her little sticks in various forms which did not quite please her, at last hit upon one which did. She looked at it for a moment, then suddenly clapped her hands, chuckled with delight, and called her neighbor to observe the feat she had accomplished; and then clapped her hands vigorously again. She had satisfied the desires of her mind—had gained a result of her own devising, and felt in her small measure the joys of invention.

In this school I noticed that reading, writing, and elementary arithmetic were taught to the children over six years of age. This, which the rigid purists of the kindergarten system generally regard as an innovation, is, in my opinion, a very desirable innovation, forms the proper transition and introduction to the work of the ordinary school, and constitutes a fitting application of the

principles already carried out. It is desirable for this reason, if for no other, that the children thus prepared can take their place in the ordinary school without experiencing the sudden shock which those children experience who are at once transferred from the play-work of the kindergarten to the routine work of schools in which as yet Fröbel's principles are unknown. My own opinion is, that the programme of the kindergarten should cover the period from three to eight years of age, an extension which would admit of the fixing and solidifying by practical application of the rudimentary knowledge gained in the numberless instructive exercises of the kindergarten proper, and for want of which much that is learnt there is in danger of being overlaid or lost. It is not enough to know—we must have a conscious knowledge. If what we learn is to gain a firm footing in the mind, and become a real possession, we must know that we know. Now, the addition of two years to the ordinary kindergarten course would give the opportunity for converting casual knowledge into real knowledge, and for fixing firmly in the mind the valuable ideas gained through the practical exercises in observing and using the forms (including surfaces, edges, angles, etc.) of the sphere, cube and other solids, as well as for carrying onward the drawing and arithmetic, and learning more and more of the properties of material objects. It is a mistake into which many outsiders fall, to look upon all that is done in the kindergarten as so much play. It begins with play certainly, but it does not end in play. A great part of it is play that has work in view, and is work—unless we are prepared to deny that name to the constant exercise of the observing powers, with the attendant comparison, discrimination and judgment; to the equally constant exercise of the imaginative faculty in the development of contrivance and invention; to the cultivation of taste by singing, drawing, rhythmic movements, etc.; to the training of the moral feelings by association of the children with each other, and to the attainment of deft and correct manipulative skill. All these objects, and many others that are incidental, come within the scope of the kindergarten, and it is absurd to deny that they are all more or less intellectual in their nature and aim, and therefore to assert that they are mere play. At the same time it must be admitted that the ideas obtained through these means are of a strictly rudimentary character, and are wanting, of course, in definiteness and accuracy. And therefore it is that some extension of the course is desirable, with a view to the further development of the thinking powers, and to the converting of unconscious into conscious knowledge. In connection with this remark, I am bound to say that I saw but little of definite developing power among the kindergarten teachers of Germany. There is far too much telling and doing for the children what they ought to be required, even young as they are, to do for themselves; and it is this very general tendency to the mechanical which lays much of the practice of the teacher open to the sharp strictures which I have already referred to. I may add, moreover, that I was much surprised that on no one occasion did I witness a lesson on objects. I do not say that such lessons are never given, but it certainly never was my fortune to be present at one. The only objects I saw in the hands of the children were those constituting the various "gifts," and to these, as far as I am aware, their lessons were strictly confined. Not a flower, twig, leaf, stone, out of the boundless variety of nature's stores, nor any models of artificial productions, came into the lessons. This appears to me a serious omission, and requires an explanation. The "gifts" are most valuable. I certainly would not supersede their use, but they are not everything; and it appears to me that no day should pass in the kindergarten without a lesson on some object of nature or art. I have felt myself compelled to make these remarks, but I shall be glad to be set right if I have fallen into error as regards this very important matter.

[*To be continued.*]

ANSWERS TO CORRESPONDENTS.

COL. F. W. PARKER:

Dear Sir,—Can you furnish anything in the line of supplementary reading for lowest grade of primary work? We use McGuffey's First Reader for our regular work. I would like supplementary readers bound in paper. If you have anything will you please send your price list.

Should use with your reader, sets of Monroe's, Appleton's, Swinton's or Barnes's First Readers and the Franklin Advanced First Reader. There is very little in pamphlet form that can be read in first grades.

COL. F. W. PARKER:

Dear Sir,—Enclosing some subscribers for your PRACTICAL TEACHER, I would also report that our Institute instructor, Dr. ——, was not inclined to do justice to the "New Methods," as, for instance, he said the maxim of the "New Lights," "*Learn to do by doing*" (the subject of your address before the Meadville Association), was half of a *great truth*, or half of a *great lie*, he did not know which to characterize it. He then emphasized the fact that there must be a distinct *ideal* in the mind before the "doing," and the

guidance of the *skillful* teacher I was compelled to interrupt him and ask him if he understood that these things were ignored or overlooked by those who emphasized the "doing method," when he had to admit that he did not mean to say they did. I then said I knew of no one who more insisted upon clear ideals and careful oversight than yourself, and I did not think it fair to leave an inference to the contrary. The Dr. also said that the "New Lights" were unfavorable to tests of work, which he regarded a great mistake—a fatal one—but who tests so carefully as recommended in your writings? Then, when asked if he believed in the set and formal examinations, he said, "No, by no means;" he would abolish them at least for one or two years, until a more rational method could be adopted. What do these men mean? The Dr. also announced that some of his ideas were original and new to the profession. The Dr. was not unfriendly, and really gave instructions in new methods, and yet found fault with the name: and so gave a mixed impression. Give us more light. The darkness disappears.

There is nothing so wholesome as sound criticism, and even captious, unfair criticism should be thankfully received, if these things "must needs be." Both kinds drive a teacher back to a re-examination of principles to stop the train, and tap the wheels to see if there is a break; unless, perchance, the criticised bristles up and uselessly spends his time in trying to defend himself. I would respectfully ask the Dr. what particular phase or point of education is not covered by the maxim: "Things that must be done should be learned by doing them." Comenius thought it covered everything, and Dr. W. T. Harris agrees with Comenius, who was also a doctor. So you see doctors disagree. It may be that the disagreeing doctor thinks that all "doing" consists in the expression of thought, and soundly argues from that standpoint that one must have *a* thought before one expresses it, just as one must have a cake before one can eat it. Dr. Comenius believed that *thinking* was essentially *doing*, and that we must learn to judge by judging, compare by comparing, imagine by imagining; that in all the steps to the formation of an ideal, things must be done, what must be learned by doing. The force of this maxim is found in a pedagogical perversity which tries *to do one thing by doing another.*

Let us spend no time in quarrelling over the authorship of the so-called new methods. Most of the really new methods (methods *invented* during the last thirty years) are decidedly bad. The best methods have been used by every true teacher since Adam, but, like the new commandment, there is immense room for the practice of a very old theory. The only criticism I would make upon the Dr. (and I would make that sparingly), is that many teachers might hear of his judgment, and creep back to their dark school-rooms with the sweet consolation that their work is all right; that all innovations are humbugs. *En avant*, word-cram!! There is a class of educators, grand, good, noble men, who preach a gospel of consolation to those teachers, who do not believe in better work. The Dr. is not one of them, for he taught the word method when I was a boy. As for examinations, I quite agree with the Dr. They are *perfectly indispensable.* The principal use of examinations is to find out whether our work as teachers is the best that can be done.

COL. F. W. PARKER:

Dear Sir,—Will you please answer two questions, either direct or through your journal? 1st. Where can I get "*number cards*" to carry out your method in that branch? I use the German method, having graduated under Anna C Brackett. 2d. What chart can I get as "*self help* to pupils in *diacritical marks.*"

My Arithmetical Charts are published by Cowperthwait & Co., Philadelphia.

Monroe's, Appleton's, or Barnes' reading charts will help you in teaching diacritical marks. There is little need for teaching the latter, except as a means of using dictionaries.

FROM A PRESIDENT OF A BOARD OF EDUCATION IN MICHIGAN.

COL. F. W. PARKER:

Dear Sir,—I have been reading your PRACTICAL TEACHER with great interest and profit. It impresses me as so valuable to the teacher, that I shall advise, and *insist*, if I could, that every one of our primary and grammar teachers shall take and read and understand it.

Mrs. Parker's article on Breathing Exercises, I like very much, and I want to thank her for it.

At such leisure as I have been able to get, I have been investigating methods from a psychological standpoint. Have re-read Carpenter's Mental Physiology. Spencer's Education, and am now on the latter's Principles of Psychology. Of late I have been thinking about arithmetic a great deal. Last night my little boy, seven years old, was fevered and sleepless all through the night. His mother found him kneeling in his bed making figures in pantomime on his pillow, and his mind was running on his lessons in number. She told me that he had complained of late that he *could not understand* the work given him by his teacher. Of course, I shall suspend his instruction in numbers for a time. But I have long been satisfied that the present methods of instruction in the *processes* are very faulty, and I am almost convinced that the processes themselves are very faulty. For instance, in the November number of THE TEACHER, at page 45, you give definitions of the terms of subtraction. Are they not faulty? John has 16 apples, gives James 6, how many has he left? 16—6=10. Your definitions fill the bill. But, John has 16 apples, James has 6. How many more apples has John than James: 16—6=10. In this case the mental process is *not* the separation of 16 into

two numbers. The minuend *is not* to be separated into two numbers. The subtrahend is not included in the minuend. The mental process is one of comparison, and is essentially in the *first* instance a process in addition. That is to say, primarily the child builds up from 6 to 16. The *processes* of multiplication and division as taught, are not intelligible to the child mind, and most teachers contend that it is better to teach the mechanism of the process only and not attempt to trouble the minds of their pupils with the reasoning process by which the process becomes the logical expression of the thought. Now in the present state of things, this may be the right thing to do. But it is vicious, educationally, and is the effect, I believe, of an incomplete or faulty symbolism. I have not thought these questions out yet. My mind is still working on them.

But I am becoming more and more convinced, that the teacher should be thoroughly trained in psychology to be able to *teach*. Pardon me for troubling you at such length. Can I aid you in developing your work any through experiments in our schools or otherwise? I should be very glad to be able to help in advancing the cause of rational teaching.

When a layman of a good heart and good sound sense takes practically hold of educational questions the children may rejoice; and when that layman becomes the presiding officer of a school board, rubbish and nonsense in schools hide their diminished heads. This letter is published to show the spirit of one earnest, practical man.

In regard to the question in comparison—for it is not a question in subtraction per se: the difficulty of discussion arises from the fact that it is not easy for adults to place themselves in the position of the learning child. How much larger a number of apples is 16 apples than 6 apples? Or, how much smaller a number is 6 apples than 16 apples? Or, what is the difference in numbers between 16 and 6 apples? The question is the exact psychological process of comparison necessary to reach the correct result, without using any preformed judgments in the process. Place the objects before you. Marks will do here.

I I I I I I I I I I I I I I I I

I I I I I I

How much larger a number of marks is 16 marks than 6 marks. The smaller tells me one of the numbers into which I must separate the larger number in order to find the result desired. The larger number *must be* separated in order to find the difference.

How much smaller is six than sixteen? I must separate 16 into 6 and another number. I can unite the unknown numbers one by one with six, the smaller number, until I count 16. Then what must I do? Separate the new sixteen into 6 and another number. This other number I can find by counting.

What is the difference between 16 and 6? I must hold the numbers in my consciousness and compare; the comparison involves the separation of 16 into 6 and 10. Then subtraction is the separation of a number into two equal or unequal numbers one of which must be known.

COL. F. W. PARKER:

Dear Sir,—In the September issue of THE TEACHER you incidentally refer to a much debated question in number, *i. e.*, "$2\times4=8$, to be read two fours are eight." What name is given to the $\times$?

Does this (2×4) mean four taken two times? Or is it to be read Chinese fashion? Or is our primary method to take "$\times$" to mean "multiplied by," according to the old arithmeticians? I find it much easier to teach "two times four" and yet am annoyed by the change in method in higher classes.

I am Teacher of Fourth Grade Training School.

Please try to "take" four apples three times. You may have the same difficulty that a teacher had yesterday, who tried to teach a little boy that seven times one, is one "taken" seven times. She gave the little learner blocks, but he, trusting to his eyesight and former use of language, stoutly asserted that one taken seven times is one. "Don't you see it, Johnny?" the teacher said, in despair; "here I have taken one seven times," and she took seven blocks, once. I would not use "times" in this (non)sense with children. Say three fours. Any child can see that. A primary teacher who teaches for higher classes will have a hard time of it. It is time that the higher schools and colleges taught for the lower classes.

COL. F. W. PARKER:

Dear Sir,—How much would you explain in teaching arithmetic? Yours, TEACHER.

Never explain anything in arithmetic except forms of language. A rule, definition, or explanation in arithmetic prevents proper mental action. Have your pupils discover everything for themselves. Such a course would save three fourths of the time now given to arithmetic. Explanations induce weakness—a weakness that leads to helplessness in thought power. Let your pupils "work out their own salvation with fear and trembling."

COL. F. W. PARKER:

Dear Sir,—I find one boy about twelve years old who comes recommended as a "Second Reader pupil." He knows *nothing* really of the book lesson; will notice nothing particularly in the room or on the play-ground. Is quite proficient in the use of tobacco and profanity. His only ambition is to do wrong, not to have fun, but for wrong's

sake. He is, seemingly, a curse to the boys at play, and in the school-room. I am unable to interest him with my understanding of child nature and my facilities. I have no apparatus but desks and a black board. Very few books and those of the oldest style. This boy is a constant idler and a seeker after meanness. Will you please give me some suggestions as to the course to pursue with him?

My school is far in advance of itself, *i. e.*, they know but little of the principles of what they have passed over. Will it be better for me, not knowing whether I will be with them more than one term, to put them all within the compass of their understanding or let them go as they have been taught? Please answer and oblige.

"That bad boy" is to be found in most schools, but with very few exceptions he can be saved, and in his salvation the teacher, who saves him, will learn an exceedingly profitable lesson. That boy has a heart to love something good, unless the divine spark be utterly quenched. To find that spark and fan it into a flame is work nearly divine. The last thing to be presented is that which the boy has been trained to dislike. His old enmity will arise and increase by practice. Find the good thing he likes to do and begin there. It may be he loves power: give him something to do in the way of caring for the school-room. "I want you to help me, Henry," might help. Try him with drawing, molding with sand or clay, making a dam in the small brook near by to illustrate the formation of lakes or the force of water. Set him to making blocks, and linear, square and cubical measures for teaching number. Walk home with him, find out what he likes to do, and talk with him about it. Perhaps he likes to hunt and knows the habits of rabbits and birds. The next day have a talk about animals; bring in a stuffed specimen if you have one, arouse the bad boy's attention and when you see his face light up, ask him a question. "Who will bring in a beetle, craw fish, or cocoon for to-morrow's lesson?" The bad boy may volunteer; the next day ask him to show the specimen, tell where he found and all he knows about it. "Here is a picture of the animal, would you like to see it?" "Here is a story about it; would you like to read it?" "Put the beetle on your desk, and draw it."

You haven't apparatus!! Probably within a stone's throw of your school-house there are ten thousand things you could use in teaching if you knew how. The reason why so many so-called bad boys are lost, is that the full and over-running storehouse of apparatus that God has given us in nature, is not used to arouse thought. I know many teachers in thickly populated cities who would dance with joy if they could have the immense apparatus to be found in the surroundings of every country school. Finally, my dear teacher, do you love that boy? Is he to you the *one* gone astray? If you have a little love for him, fan it into a flame, and in its warmth your whole school will live a new life. "*The greatest of these is charity.*" If you stay but an hour in a school-room, light it up with a new thought, inspire a new emotion that always comes in the search for truth. Never compromise in any way with evil, not even for school directors.

COL. F. W. PARKER:

Dear Sir,—I spend much effort trying to defend your views and practice against the charges of the blind fogy traditionists; but, I am afraid, if called upon, I could not justify your phrase, *vocabulary of words.* Leave out *of words.*

I speak of this because the poor creatures "make a handle of every little thing."

I notice that several writers use the same phrase lately.

Yours in the cause.

You are right and I am wrong. Give us another. There is nothing like honest criticism.

COL. F. W. PARKER:

Dear Sir,—As a young man that desires to try to advance his pupils in the right way, and has always been at a loss to know how to proceed the first day of school, I write to you for some suggestions on "What to Do the First Day of School." I think much of the success of the school depends on the first day's work, and that a teacher should have some definite plan for the first day, and let that plan be the foundation. I teach in the district schools of this county and want some suggestions on the subject mentioned above and confined to a school of three grades. Please give me some help or point out the way that I may help myself. By doing this you will bestow a great blessing on your

HUMBLE INQUIRER.

See "Beginnings," in September number of THE PRACTICAL TEACHER. Fill your mind with the best thoughts and your hands with the best work; fill your heart with love for all mankind in general, and your pupils in particular; then turn *yourself* over to your pupils.

COL. F. W. PARKER:

Dear Sir,—Will you have the kindness to give me the name of what you consider a good singing-book to use in school with pupils of the ninth and tenth grades, and oblige

ONE OF YOUR FRIENDS.

The new books published by D. Appleton & Co., and written by H. E. Holt, are excellent. Luther Mason's books published by Ginn & Heath are also excellent. Daniel Batchellor's books are good representatives of the Tonic-sol-fa method. —S. R. Winchell & Co., Boston.

BOOK REVIEWS.

MONROE'S READERS. COWPERTHWAIT & CO., PHILADELPHIA. One of the most promising signs of educational progress is found in the great and steady improvement of reading books. It is not an easy task to select the best from, at least, five series of readers. The pioneer in this marked advancement of reading matter for the children is Monroe's Series. Although closely pressed by a number of new series of reading books, it still firmly holds its ground.

Twelve books forming the series, a small library, are upon our table—a primer, first, second, third, fourth, fifth and sixth reader, with an advanced first, second, third, fourth and fifth reader.

Text books are of two kinds; one kind made by professional text book makers, whose power is shown by imitation and absorption of others' thoughts and plans. Of this class a few have been very successful. Their success is due to a judicious watchfulness of educational movements and excellent taste in adapting their books to present needs. This class of editors are very flexible in bending their energies to supply all the wants of all the teachers and school directors in the country. One set of teachers demands phonics, another the alphabet, another diacritical marks; good people, long moral essays; elocutionists, high-sounding diction, and the compliant editor meets each demand, thereby making his book a literary hodge-podge.

The other class of book-makers has original plans, founded upon some pedagogical principles and worked out with more or less narrowness, yet in a manner generally consistent with the principles. I say generally consistent, for publishers remain a very influential factor in book-making, and will sometimes warp the best plan out of its original constitution. When a book of this kind appears, although it may be financially a failure, it succeeds in time in founding a new school of teaching. Warren Colburn's wonderful arithmetic, David P. Colburn's unsuccessful arithmetic, Guyot's Common School Geography, Miss Stickney's Language Lessons, Higginson's History, are exercising a powerful influence for better teaching, because their authors have applied fundamental pedagogical principles. Every original plan does not, however, determine a real, if a popular, success. Many text books are filled with the applications of a one-sided truth. The truth that is mighty and will prevail, is co-ordinated, all-sided, related, united truth. There is a sound principle in the use of phonics or the so-called word method, but to make a series of primary readers founded wholly or principally upon either is a great mistake.

The late Prof. Lewis B. Monroe was an excellent, enthusiastic teacher of reading and elocution. He never spared pains or money to improve his teaching power. He went to Paris six times to get the best instruction the world affords. He once told me that he often paid as high as one hundred dollars for an hour's talk with a celebrated actor or singer.

A single man, however great, is only half a man until he has a good wife. (Unmarried male teachers will please read this twice.) Prof. Monroe had the fault of most great teachers of elocution, to wit, an inclination to sombre, high-sounding selections. This tendency toward solemnity was greatly modified by the knowledge of children and excellent taste of Mrs. Monroe who, in the advanced readers, has carried out the spirit of her husband's plans, tempered by a growing insight of what children really need. Indeed, in many respects the advanced readers are better than the originals.

The good points in the series may be summed up as follows: First, a thoughtful plan by an excellent teacher; second, a carefully selected vocabulary for beginners; third, judicious repetitions of words; fourth, very interesting sentences and stories for children,—this unquestionably marks the superiority of these books,—there is not a dull nor an uninteresting lesson in the primary books; fifth, the literature is perfectly pure as well as interesting; sixth, the new advanced readers have recognized the fact that many teachers are striving to teach elementary science. The Advanced Third Reader, especially, is filled with suggestive and interesting stories of animals. Seventh, the number of useless marks and figures is reduced to the minimum. This peppering the pages of primary readers with diacritical marks, and other so-called helps to pronunciation, accent and emphasis, when the learner can pronounce, accent and emphasize every oral word a printed one recalls is cruel to both child and teacher. How not to notice them is an art not easily acquired. Why should paragraphs be indicated by figures? Answer—The figures aid the reader in keeping the place without following the thought. Why Mrs. Monroe, who wisely drops figures in the new readers, up to the fourth, and then resumes their use, is not easily understood. Eighth, the pictures are well chosen and in excellent taste. The points criticised are: First, the use of single words in

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THE PRACTICAL TEACHER.

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FRANCIS W. PARKER, EDITOR.

Honest investigation and a courageous application of the truth when found.

HOW TO TEACH "LANGUAGE" TO YOUNG PUPILS.

ROBERT C. METCALF, SUPERVISOR OF SCHOOLS, BOSTON, MASS.

The teacher should remember that by "language teaching," we mean that training which shall result in a ready and correct use of language. She must also remember that language is used in two ways only: orally and in writing. Remembering also that children learn to talk by talking and to write by writing, she is prepared to take the first step in language teaching intelligently.

1st. Give the pupils something to talk about. Tell them a good story and then let them, in turn, tell it to the class. One pupil can tell a little of it, and another may then take it up and carry it on until a third is ready to assist. In this way half a dozen, and even more, pupils may take part in telling the same story.

Other stories can be added from day to day until a sufficient stock has been accumulated for ordinary use. A list of these stories should be written upon the blackboard.

Daily, or whenever the pupils are weary of any class exercise, let the teacher say, "Now, children, let us tell stories. Who will tell the story about the 'monkey.'" Ned, and Annie and George tell this story in their own simple language. "Now, who will tell the story about our dog, Carlo?" Three or four other children take part in this story. And so the story-telling goes on until it is time to resume the usual class exercises.

The children should be encouraged to tell these stories in their own words. Few if any corrections should be made until the story has been fully told. Then the teacher asks if any one has noticed a mistake. Such mistakes as have been noticed will be commented upon by the teacher, but in such a way that the pupils will feel perfectly free to "take a hand" in the story-telling whenever they have a chance. The teacher should remember that most of the mistakes will disappear as the pupils become accustomed to talking.

These stories should be *told* and not *read* to the pupils, in the first place, by the teacher. Young children are very likely to catch the words of the book, and whenever they do so, the story-telling, as a language lesson, is of little value.

When the children are old enough to write, these stories can be written upon the slates. Thus they may be trained in the use of *written* language. They should be encouraged to express themselves in writing just as they have expressed themselves when telling the story orally. Moreover, the teacher should neither talk herself nor allow anyone else to talk while this writing is going on. She may walk quietly among the scholars as they write and may take note of such errors as she would like to comment upon before the whole class, but the pupils should have at least ten minutes of uninterrupted time for writing.

The work thus briefly outlined should be carried on for four or five years, the stories being adapted to the ages or capacities of the pupils. If it be true that children learn to talk by talking, and to write by writing, surely we have a right to expect that at the end of five years of such training they will express themselves both readily and correctly in good language.

"DEVELOPMENT" IN FRACTIONS.

ORVILLE T. BRIGHT.

A prominent journal of education has recently published a series of articles on methods pursued in the normal school. They have been well written, and are in the main not only interesting, but instructive. The best of all was the description of a lesson in geography, conducted by members of the training class; the worst was a lesson or series of lessons on fractions by one of the professors. The method pursued in multiplication

and division of fractions particularly attracts the attention of the teacher who has studied this subject from the standpoint of the child. At the beginning of the article the writer says:

"In one of our previous sketches we used the word *development*, with some hesitation, as we said, because we had met so many different ideas of it. In this sketch it is one of our purposes to give a clear idea of development teaching by methods in arithmetic, as they are worked out and brought for discussion and criticism into Prof. ——— class.

"In his plan of work, immediately following division come properties of numbers and factoring, greatest common divisor, least common multiple, and then Federal money. In this he would lay a basis for decimal fractions, which he would teach before common fractions."

Here we have the whole brood of subjects found in the arithmetics between the "Fundamental Operations" and fractions, in the exact order in which the professor's grandfather learned them. Of the list quoted "Federal Money" is, of course, indispensable, but there is no need of making this a separate topic. When division is completed, the writing of dollars and cents should be understood. Further than this the topic has no special significance, and accuracy in using characters to represent Federal money should be acquired at the same time that children are acquiring facility in addition, subtraction, etc.

I have no hesitation in expressing the belief that children would be better arithmeticians and better thinkers, if every one of the other topics were stricken from the text-books. The "Greatest Common Divisor" is an unmitigated humbug. Once past the subject in the text-book, the children never hear of it again until they reach "promiscuous examples" at the end of the book. Of adults, not a thousand in the United States, outside of schoolhouses, know what the term means. The finding of the greatest common divisor is not even good mental discipline; nothing is, that has no purpose nor application beyond the thing itself.

Almost as much might be said of the "Least Common Multiple," when taken in connection with the ordinary method for finding it. The constant use of this method, into which children almost invariably drift, in the different processes in fractions, not only does not tend to mental development, but most effectually retards it. In all operations in fractions, or with fractions that are actually used in this world, the resultant denominator should be *seen*, and not *foun* any cut-and-dried process. There is menta tion when the required denominator is tho out with the greatest possible dispatch; but it comes dripping off the end of a pencil pure machine work. Hence, it would be b if no *process* for finding the least common tiple were ever taught to, or "developed" f children.

What grotesque problems the bookmakers been driven to in order to furnish practice in ing these two things. The writer never h them mentioned without thinking of certain of wheat, or the traditional men or women both, that once upon a time chased each o round an island.

Why should children factor numbers so in minably? Where in arithmetic is factoring used outside of the subject itself, and in the already mentioned? In cancellation, someb says. Yes; but what rubbish is strung toget in order to get something to cancel. This t reaches its greatest glorification in what is ca compound proportion.

So far as "Properties of Numbers" is c cerned, whatever is of any consequence will acquired incidentally. The writer has a d recollection about "casting out the nines," something else, but never saw the subject " veloped."

If there were nothing else to be done, time of children might be consumed by these s jects, but in these latter days, when the wh educational world seems on the move, it is a p that normal professors cannot find a better use their well-paid services.

The following extract from the article in qu tion is called a

"METHOD FOR MULTIPLICATION OF FRACTION

$$\tfrac{3}{4}\times\tfrac{2}{3}=?$$

The problem is read in all ways: $\frac{3}{4} \times 2 \div 3$; $\frac{1}{3}$ of 2 times $\frac{3}{4}$.

Teacher. By what are you required to multip

Pupil. By $\frac{2}{3}$.

T. Because you multiply by $\frac{2}{3}$, what is it of example?

P. The multiplier.

T. In multiplying by $\frac{1}{3}$ of 2 times $\frac{3}{4}$, what is be done first?

P. Get 2 times $\frac{3}{4}$.

T. How multiply $\frac{3}{4}$ by 2.

P. By multiplying the numerator by 2.

T. Do so, and read the result, $\frac{3\times2}{4}$

P. The product of 3 and 2 divided by 4.

T. By what have you multiplied?

P. By 2.

T. By what are you required to multiply?

P. By 2 divided by 3.

T. How does 2 compare in value with $\frac{2}{3}$?

P. 2 is three times as large as $\frac{2}{3}$.

T. Since we have multiplied $\frac{3}{4}$ by a number three times as large as the true multiplier, how does the product compare in value with the true product?

P. It is three times as large as the true product.

T. How, then, find the true product?

P. By dividing the product already obtained:

$$\frac{3\times2}{4} \text{ by } 3.$$

T. Do so, and read the result.

P. $\frac{3\times2}{4\times3}$ The product of 3 and 2 divided by product of 4 and 3.

T. Cancel and read the result.

P. $\frac{\overset{1}{\cancel{3}}\times\overset{1}{\cancel{2}}}{\underset{2}{\cancel{4}}\times\underset{1}{\cancel{3}}}=\frac{1}{2}$

Many examples would be solved, and then would come, as mentioned at the end of the first method given, the general statement by class with reference to process.

A method would now follow this for the other case in multiplication of fractions, viz., $\frac{2}{7}$ of $\frac{3}{4}$."

Comparing the length of the questions and answers one might naturally ask, Who is being developed?

To begin with, the question is an absurdity. It is one of those processes which should be relegated to algebra. The question never has arisen, and never can arise. It had to be *invented*, or it would never have appeared in the arithmetics. No definition of the word "multiply" that can be found will make the question admissible for children. For instance, take a boy who has two thirds of a pie, and tell him to give three fourths of it to his sister. If he complies, tell him that he has multiplied his pie, and, if he is not a fool he will think you are, provided, of course, he has not been put through a "grind" similar to the foregoing.

No teacher has a right to teach any process in number to children, which cannot be demonstrated with things. This can easily be done when numbers are small, or in case of fractions when the fractional parts are large. We can show how two fractions may be united, how one fraction may be separated into two, how a part of a fraction may be taken (as in the case of the pie), how several fractions exactly alike may be united (real multiplication), and how one fraction may be divided by another fraction. But who is going to demonstrate with things this process of multiplying one fraction by another?

If anything could be worse than the process already given, it is the following

"METHOD FOR DIVISION OF FRACTIONS."

The teacher expresses the following example upon the board: $\frac{4}{7}\div\frac{8}{9}=?$

Teacher. Read the example.

Pupil. $\frac{4}{7}$ divided by $\frac{8}{9}$.

T. By what are you required to divide?

P. By $\frac{8}{9}$.

T. What is $\frac{8}{9}$ of the example?

P. The divisor.

T. Express the divisor in another way.

P. $8\div9$.

T. Read the expression now ($\frac{4}{7}\div(8\div9)$.

P. $\frac{4}{7}$ divided by 8 divided by 9 (or by the quotient of 8 divided by 9).

T. How can you divide $\frac{4}{7}$ by $8\div9$?

It may be necessary here to refer to multiplication of fractions to make this clear, as: When you multiply a fraction by a fraction, how is it done?

P. By first multiplying the fraction by the numerator of the multiplier, etc.

T. Because you multiplied by the numerator, by what ought you, do you think, to divide?

P. By the numerator of the divisor.

T. What is the numerator of the divisor?

P. 8.

T. How do you divide a fraction by 8?

P. By dividing the numerator by 8, or multiplying the denominator by 8.

T. Which is easier in this case?

P. It is easier to multiply the denominator.

T. Do so, and read the expression.

P. $\frac{4}{7\times8}$ 4 divided by the product of 7 and 8.

T. By what have you divided?

P. I have divided by 8.

T. By what were you required to divide?

P. By 8 divided by 9.

T. How does the number by which you have divided compare in value with the fraction by which you were required to divide?

P. The number by which I have divided is nine times as large as the fraction by which I was required to divide.

T. How, then, does the quotient obtained, $\frac{4}{7\div8}$ compare in value with the true quotient?

P. It is $\frac{1}{9}$ as great as the true quotient (or $\frac{1}{9}$ of the true quotient).

T. How can the true quotient be obtained?

P. By multiplying the quotient, $\frac{4}{7\times8}$ by 9.

T. How is a fraction multiplied?

P. By multiplying the numerator.

T. Do so, and read the result.

P. $\frac{4\times9}{7\times8}$, the product of 4 and 9 divided by product of 7 and 8.

T. Find the common factors.

P. $\frac{\overset{2}{\cancel{4}}\times9}{7\times\underset{2}{\cancel{8}}}$ Canceling.

T. What is the product of the numerators?

P. The product is 9.

T. What the product of the denominators?

P. The product is 14.

T. Read the result.

P. $\frac{9}{14}$.

T. Conclusion.

P. Therefore, $\frac{4}{7}\times\frac{8}{9}=\frac{9}{14}$.

Then comes solution of many problems and statements as before stated.

In a similar manner, the whole subject of arithmetic may be presented to a class. To teach arithmetic by development requires a full appreciation of the principles upon which it is based, a thorough knowledge of the methods, and practice under skilled critics. Even then a teacher must make thorough preparation for each day's lesson."

In the following question, $12\div3=$? we either ask how many threes in twelve, or we ask nothing. No matter what the division is, the significance is the same. Let us see how consistent we are with children, and in order to judge, the question can be fairly considered only from the standpoint of thorough sympathy with the child. We ask such questions as the following: At five cents each how many oranges can be bought for two dollars? How many strings three inches long can be cut from three yards? Three pounds of candy will supply how many boys with twelve ounces each? All for what purpose? In order that the children may understand that in the comparison of one number with another they must be alike in kind (division is one means of comparison of two numbers), and this principle is rigidly adhered to throughout the arithmetic, with one exception. Again, while the children are struggling with division, we impress upon them that their work becomes absurd and impossible whenever the divisor is greater than the dividend, and this holds good, with one exception.

Now we would like to ask why in the name of common sense make these exceptions? Recollect the standpoint from which the question is asked. Halves, sixths and ninths are denominations just as different as inches, feet and yards; and it is quite as absurd to talk of dividing three eighths by five eighths as to talk of dividing three by five. If there were any necessity for, or any mental discipline in, these inconsistencies, the case would be different.

Some time after hearing a class in recitation of this normal school sort I had occasion to call at the home of one of the brightest pupils of the class. She had gone through her recitation (like the $\frac{4}{7}\div\frac{8}{9}$) without a break. Indeed, it was almost too well done, but in the class of fifty not half could do it at all (which would indicate an overruling Providence). I called the child to me and asked her just to explain one of those problems to me again. She began glibly enough, but stopped midway and after a moment of deep thought said, "Why, how *does* that go?" Here you have it in a nutshell. How does it *go?* To the listener it meant, what *words* did I learn at school?

Now let us see about these problems. $\frac{2}{3}$ of $\frac{3}{4}$ ("the *other* case in multiplication of fractions") is perfectly intelligible from a child's standpoint, and may be explained either with material or immaterial fractions. The explanation suggests itself and needs no comment. If, however, a boy has been told to take half an apple, and, again, to take half of one of the halves, and in his simplicity he thinks he has been dividing the apple and the half-apple, what are you going to do about it? Please *think* before answering. This is all there is in what is called or miscalled multiplication of one fraction by another.

In the last operation $\frac{4}{7}\div\frac{8}{9}$ is the same as $\frac{36}{63}\div\frac{56}{63}$, or 36 apples$\div$56 apples. A manifest impossibility. The child can tell what part of 56 is 36, whether sixty-thirds or apples, but that is not dividing 36 by 56.

Would I make fractions alike in kind for

division? *Invariably*, just as I would for subtraction or addition, and for the same reason.

Dividing a fraction by a whole number is an absurdity. If the teacher who asks the child to divide $\frac{6}{7}$ by 4 wants anything, it is $\frac{1}{4}$ of $\frac{6}{7}$. But this is "the other case in multiplication." The teacher who asks the child to divide $\frac{6}{7}$ by four would never ask him how many 4s in $\frac{6}{7}$. Then it must be $\frac{1}{4}$ of $\frac{6}{7}$, and why not ask for what is wanted?

Until the children thoroughly master the operations in fractions that naturally arise in this big world of ours, they will find all the mental discipline that they need or can stand. The thorough mastery of all principles connected with these operations is what not one child in twenty accomplishes, and that through bungling methods of presentation. The teacher who has never investigated the subject will be surprised to find what fractions are in actual use, and in what that use consists. The investigation is recommended, and simple as the work will seem to the teacher of complex fractions, she is respectfully informed that the pupils under her charge do not understand it.

After the practical has been thoroughly mastered is soon enough for the purely disciplinary drill, and there should be a great deal of it. Possible operations, however, furnish quite material enough for this drill, and recollect that the crucial test of any operation is the ability to apply it to material things. Such an expression as this $\frac{\frac{3}{4}}{2\frac{3}{5}}$ is a monstrosity which may be found in any arithmetic extant (unless it be old Colburn's), as can an almost endless amount of other rubbish.

There are three questions which the teacher may well ask himself in connection with each recitation, and which would prevent many flagrant abuses of children's time and intelligence. The first two should precede the recitation, "What am I going to do?" and "*Why* am I going to do this?" The third should follow it, "What have I accomplished?"

IDEAS BEFORE WORDS IN TEACHING ARITHMETIC.

W. W. SPEER.

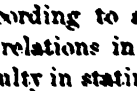
III.

Any method of teaching is valuable only to the extent that it aids the pupil in thinking. Judged by this standard, is not the use of formulas and long analyses a hindrance, rather than a help, in teaching arithmetic? In the proportion that the pupil's mind is occupied with rules and formulas, to that degree does he lose sight of the relations of numbers. He is a slave to a mechanical process until he begins to see the relations of numbers, independent of any set forms. It has been found by tests, that, in many schools, the majority of pupils who have been trained to analyze glibly the most complicated problems in the text-books used, fail entirely when asked to solve very simple questions unaided by a model solution. Herbert Spencer says: "The rule-taught youth is at sea, when beyond his rules, while the youth instructed in principles, solves a new case as readily as an old one." The power to think is a growth. Its evolution is gradual, and is measured by the growth in language. If we base our instruction on this principle we will not make the teaching of language an aim instead of an incident. Language is the means by which thought is preserved. It always accompanies thought, but is not thought. A pupil should become familiar with the facts before being taught the language of the abstractions. To become familiar with the facts of number, he must proceed by the method indicated by John Stuart Mill, who says: "*The fundamental truths of the science of number all rest upon the evidence of the senses*; they are proved by showing to our eyes and our fingers that any given number of objects—ten balls, for example—may by separation and re-arrangement, exhibit all the different sets of numbers, the sum of which is equal to ten. All the improved methods of teaching arithmetic to children proceed upon a knowledge of this fact. All who wish to carry the child's mind along with them in learning arithmetic—all who wish to teach numbers and not mere ciphers—now teach it through the evidence of the senses, in the manner we have described." Pupils are not aided in seeing the relations of numbers by analyses similar to the following: 8 is $\frac{2}{3}$ of what number? $\frac{1}{3}$ is $\frac{1}{2}$ as much as $\frac{2}{3}$. Since 8 is $\frac{2}{3}$ of some number, $\frac{1}{3}$ of the number equals $\frac{1}{2}$ of 8, which is 4. $\frac{3}{3}$ are three times as much as $\frac{1}{3}$. Since 4 is $\frac{1}{3}$ of some number, $\frac{3}{3}$ or the number, is three times 4, which are 12. Therefore 8 is $\frac{2}{3}$ of 12. Again, $\frac{2}{3}$ of 12 are how many twos? $\frac{2}{3}$ of 12 are two $\frac{1}{3}$s of 12; $\frac{1}{3}$ of 12 is 12 $\frac{1}{3}$s of 1; $\frac{1}{3}$ of 1 is $\frac{1}{3}$; $\frac{1}{3}$ of 12 is 12 $\frac{1}{3}$s of 1, or 12 thirds, or 4. $\frac{2}{3}$ of 12 are 2 $\frac{1}{3}$s of 12, or 8. 8 is as many twos as two is contained times in 8. 2 is contained in 8 four times. Therefore, $\frac{2}{3}$ of 12 are four twos.

Pupils, in their effort to give these exhaustive

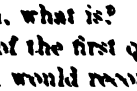
word analyses lose sight of the numbers as wholes. The thought is sacrificed to the form. Is there anything to be gained by the use of many words? Is not the best proof of the pupil's comprehension of a problem a simple and direct statement of the relations he has discovered? Will the power to give this be gained more rapidly by repeating the results of another's reasoning, or by the exercise of the learner's own faculties? Does not the repetition of a ready-made analysis defeat the purpose for which it was created—an analysis of the question by the pupil? It may be urged that a pupil's statements are often vague, while a model analysis furnishes correct and clear forms of expression. If his statements are vague be sure that his ideas are also vague. Would it not be better to secure conciseness by training to habits of close thinking, than to employ a method which does away with mental activity by demanding that all things be done according to a pattern? If the pupil perceives the relations in a problem, he will experience no difficulty in stating the comparisons by which he arrived at the results. Is not the ability to see the relations what you desire? If this is not your aim, what is?

For the analysis of the first question, viz: 8 is $\frac{2}{3}$ of what number? I would recommend the following: 8 is $\frac{2}{3}$ of 12; and, for the second, this: There are 4 twos in $\frac{2}{3}$ of 12. Can you not see more readily and distinctly that 8 is $\frac{2}{3}$ of 12 without than with the analysis? Observe the following:



Is there anything misty about the fact that 8 is $\frac{2}{3}$ of 12? Is there anything to be gained by obscuring this fact by a cloud of words? It is said that simplicity is the highest characteristic of good teaching. Can there be anything simpler than for the pupil to look directly at the numbers (not figures), on slate, desk, blackboard, or in the mind? If he cannot readily see that 8 is $\frac{2}{3}$ of 12, he ought to be discovering less difficult relations. To train pupils to a quick and accurate habit of thinking is an important aim in teaching number. It is far better that pupils think quickly in easy problems than slowly in more difficult ones.

To train pupils to see the relations of numbers, I would suggest the following device. Place on the blackboard a question and an illustration similar to the following: $\frac{2}{3}$ of 6 is $\frac{4}{5}$ of what number?



Request pupils to write on slate or give a definite number of similar questions, and illustrate them by the use of lines, circles, triangles, squares, dots, etc. Let them bring these to the class and ask them of one another. In the beginning of the work—that is, for several weeks of it—have objects observed as the questions are stated, for many pupils can state the answers to these questions from memory, and at the same time not see a single number. The main purpose of this work is not to secure answers, but to bring into consciousness the relations of the numbers as wholes. Do not ask for a uniform method of illustration. Encourage originality. Have the neatest, most concise and best arranged illustrations placed on the blackboard. In giving directions for preparing lessons, limit the class to a certain number—that is, request them not to ask questions that involve numbers greater than the one you suggest. Deal with small numbers until the habit of bringing them into the mind is fixed. When dealing with large numbers, if the right habit of thinking has been formed, the illustrations can be omitted or simplified.

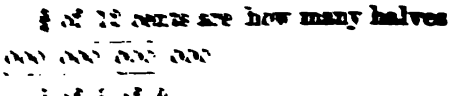
The following questions are suggested to indicate variety:

$\frac{2}{3}$ of 6 is $\frac{4}{5}$ of what number?

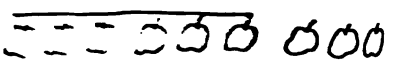
$\frac{1}{2}$ of $\frac{2}{3}$ of 4 pears is how many pears?

$\frac{2}{3}$ of 8 are how many twos?

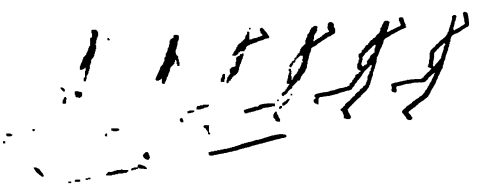
$\frac{2}{3}$ of 12 cents are how many halves of 6 cents?



$\frac{1}{2}$ of $\frac{2}{3}$ of 9 apples are how many apples?



How many 2 boys in $\frac{2}{3}$ of 6 boys?



In $\frac{2}{3}$ of 3 yards how many feet?

In $\frac{2}{3}$ of a square yard how many three square feet?

$\frac{2}{3}$ of ten are how many thirds of 6?

$\frac{2}{3}$ of $\frac{2}{3}$ of $\frac{2}{3}$ of 12 are how many?

$\frac{2}{3}$ of 3 weeks is $\frac{2}{3}$ of how many days?

In $\frac{2}{3}$ of 3 quarts there are how many pints?

6 is how many one sixths of 12?

PRODUCTION OF VOICE.

FRANK STUART PARKER.

Sound is an effect produced upon the auditory nerves by bodies in a state of motor vibration. Any form of matter, solid, liquid, or gaseous, is capable of this vibration and of originating sound. A body is in motion when it moves *en masse* from point to point; in vibration when its particles are in motion, make an excursion to and fro, but the body itself remains unchanged as to its position in space.

Bodies vibrate as wholes and also in segments. The vibrations of the body as a whole is called its fundamental vibration; of the segments, its harmonic vibration. The fundamental vibration is slower than the harmonic.

Vibrations can be communicated from one form of matter to another, from one body to surrounding bodies. Any form of matter will convey vibrations, but some mediums offer less resistance than others. The air is the chief medium of sound propagation. Each vibration of the sounding body sets in motion the molecules of air immediately surrounding it; these bound forward, strike other molecules, and fall back to position, only to repeat the oscillation, if the body still continues to vibrate. This impulse forward, communicated from molecule to molecule, spreads in every direction, producing a spherical air-wave which breaks upon surrounding bodies, its extent depending upon the initial force which produced it, and the resistance of the medium which conveys it.

Each vibration of the body causes the molecules of air to be compressed in front of it, and, as it retreats, leaves a partial vacuum behind it; this is repeated at every subsequent vibration. These condensations and rarefactions, successively propagated through the air, constitute what is termed the sonorous wave. This wave has height and depth, length, and rate of movement. The distance between two successive condensations shows the length of the wave.

A sound is heard when the air wave impinges upon the circular tympanic membrane which closes the external orifice of the ear, and, through the mechanism created especially for it, the shock is communicated to the auditory nerves, and transmitted to the brain.

The conditions necessary to *produce sound* are, a vibrating body, and a medium that will transmit the vibrations to some part of the body in communication with the auditory nerves.

The force of a tone is its relative loudness or softness. This is determined by the initial motor vibrations of the sonorous body, the path described by the oscillation of each molecule to and fro. The more energetic the vibration the louder the sound, and *vice versa*.

The pitch of a sound is its relative high or low effect. This is determined by the rate of vibration in the sounding body. The slower the vibration, the deeper the pitch; the more rapid the vibration, the shriller or higher the pitch. In distinguishing pitch the ear is limited in range in both directions, Helmholtz placing the lower limit at sixteen vibrations per second, the higher at thirty-eight thousand per second; the entire range embracing about eleven octaves.

The quality of a sound is that peculiar difference which distinguishes it from every other sound. Two or more sounds may be alike in pitch, or of the same intensity, but never alike as regards quality. It will be remembered that bodies vibrate as a whole, and also as parts, that the fundamental vibrations are slower than the harmonic vibrations, and consequently a body in vibration is producing, with every periodic vibration, sound which varies in pitch. The tones produced are termed the fundamental, and its harmonics or overtones, and the blending of the two determines the quality of the sound. These harmonics or overtones differ in bodies whose fundamental tones are the same; for instance, two bells are in perfect unison as to their fundamental tones, while their overtones are discordant; consequently they will differ in quality.

The amplitude of the sound wave shows the intensity of the sound. The length of the sound wave determines the pitch of the sound; and the form of the sound wave determines the quality of the sound, which is pleasant or unpleasant, agreeable or disagreeable as its overtones are in unison with its fundamental tone.

Voice, a particular variety of sound, produced by the vocal apparatus of the animal body, obeys in its production, the law of the general. It is produced at the vocal chords, which are thrown into vibration by means of breath impelled from the thoracic or chest cavity. These chords can be lengthened or shortened, and the pitch varied, a range of from two to three octaves being the extent of the human voice.

Anterior to the vocal chords are the cavities of the mouth and of the nose, which produce through their sympathetic vibrations, tones which reinforce the tones produced by the vocal chords, and largely determine the quality of the voice. By

the different adjustments of these cavities, certain overtones are reinforced, while others are not, giving rise to different qualities of sound which are distinguished as the vowel, consonant, and glide elements of speech.

NUMBER AND ARITHMETIC.

(See page 39, Number III.)

FROM FOUR TO FIVE.—ONE NUMBER SHOULD BE THOROUGHLY TAUGHT BEFORE ANOTHER IS INTRODUCED.—Teach four thoroughly, before attempting to teach five. Introduce the new number as a refreshing subject for discovery and learning. The power and skill with which pupils take up the new number is the best possible test of the way the preceding numbers have been learned. They will bring to the new work all the knowledge, power and eagerness to discover what they have already acquired. We see with all we have seen; we think with all we have thought; and we do with all we have done.

ONE IS UNITED WITH FOUR AND THE NAME GIVEN, FIVE.—Find all the fives you can. Draw a figure with five straight lines. Find a block with five sides or faces. Fix five as a whole in your pupils' minds and then begin the discovery of all the facts in five. It may be right to ask for the facts in five without the presence of objects. I should try it, and if the result be satisfactory, continue it. At any rate I should test pupils continually in regard to what they can do with numbers without the presence of objects.

PUPILS WITH OBJECTS BEFORE THEM DISCOVER ALL THEY CAN IN FIVE.—The less the teacher says the better. When pupils have discovered all they can without any help from the teacher questions may be used.

Teacher—Show me four. Show me five. Show me four and one. How many have you? How many fours? How many more than four? How many threes have you? How many more than one three? How many twos? How many ones? How many twos in four? How many threes in five? How many fours in five? What is one half of five?

Pupils will soon discover that they cannot separate five into two equal integral parts.

The question is, can they discover that one half of five is two and one half? Try it.

Teacher—Tell me all the things you can do with five.

Let each pupil show the facts with objects, and then tell the facts without objects.

Teacher—Show me how many ways you make five with two numbers? Show me into how many two different numbers you can separ five?

This latter direction is very awkward, and pils may not understand. Will some teacher it better? For the kinds of objects to be used pages 23 and 24, Number II, and page 49, Numb IV. For the facts to be taught see page 23, Nu ber II. Give pupils a great many practical pro lems involving the facts in five. Have them ma problems.

TAKE FIVE BLOCKS; PUT ONE BLOCK WITH FO BLOCKS. It is, perhaps, useless to make separa suggestions about the teaching of each number ten inclusive, still I am sure that every prima teacher and supervisor should make the teachi of each of these numbers a very careful and pr longed study. Numbering is an essential though element; therefore, the learning of a numb enhances power to think, just so far as limiti things by ones is concerned.

The facts in 6 are: 1+5, 6—1, 6—5, 2+ 6—2, 6—4, 3+3, 2 3s, 6÷3, 6÷2, ½ of 6, ⅓ of 6. These facts or judgments are to be discovered i 6. Then, by constant repetition they should s into unconscious or automatic action; that is, wh a particular relation of numbers is to be used thinking, no mental action beyond a slight of recollection should be necessary. The numb of repetitions needed to sink any particular into automatic action depends entirely upon t result of each separate act; and each result determined by the stimulus that aroused the A child, who, by measuring, discovers that th are 3 quarts in 6 pints, will thereby learn th there are 3 2s in 6, and that 3 2s are 6, with v few repetitions. The more limitations by ones real, practical things the pupil is called upon make, the less the number of bare repetitions words will be necessary.

THE REASONS WHY FIGURES SHOULD NOT TAUGHT UNTIL TEN IS TAUGHT ARE: 1. Ideas numbers, limitations by ones, grow *very slow indeed*. In proof of this it has been shown th most children of five or six years of age, who h not had kindergarten training, do not know than 3 when they enter school.

2. The teaching of figures instead of num is the fundamental mistake in the teachin arithmetic. If numbers and the relation numbers could be really taught, using figur the written signs of numbers, four fifths o

time now spent in teaching arithmetic, could be spent in learning the natural sciences, and other important branches, while the science of numbers would be far better known than it is now.

3. Number is an essential element in thought power, and the degree of that power, whether weak or strong, depends almost entirely upon the comprehension of the relations of numbers from one to ten inclusive. These relations measure all other number relations.

4. There is no necessity whatever for teaching number rapidly during the first two years of school life. The small numbers are the numbers in practical use by children, and for that matter by grown people.

5. The essential elements of thinking in numbers are ideas of numbers, not figures; we cannot think in figures. These ideas, as has been said, grow very slowly indeed. Now with the fact that figure-teaching is the great bane of all arithmetical teaching; is it not reasonable to suppose that the attempt to teach ideas of numbers and two distinct languages of numbers at the same time would result in a comparative failure? And in consideration of the fatal facility with which figures may be taught, is it a matter of surprise that children should take figures for numbers, thus defeating the very purpose of number teaching?

6. Expression is a means of evolving thought, and in teaching should not be used for any other purpose. After ten has been taught, by using the oral language, the written language may then be made an excellent means of reviewing the work done, and of assisting in further evolution.

For these and similar reasons I would not use figures until ten has been taught. How long it takes to teach ten I cannot yet tell. I have yet to know of an instance of ten being thoroughly taught during the first school year.

1885.

WE WISH ALL OUR BRETHREN AND SISTERS, IN THE SUBLIME VOCATION OF TEACHING, THE HAPPIEST OF HAPPY NEW YEARS.

Our source of happiness is the influence for good we exercise over the growing souls of children. All any human being is worth is his influence. Genuine value is limited to power to help others to good lives. The good or evil influence of most people is indirect, but the teacher's work goes straight to the point. Nothing can ever touch the soul without producing everlasting changes.

THE POSSIBILITIES FOR OUR IMPROVEMENT AS TEACHERS ARE UNLIMITED. In this blessed year, 1885, there is not one of us who may not double his teaching power. Every day that passes could bring precious revelations of truth into our hearts, *if our hearts were ready to receive them.* Every fresh discovery would bring with it a renewed sense of our personal poverty, indicating the immensity that remains unknown. Other vocations may be confined—that of teaching, never. The way reaches upward to the Infinite.

IN A PROFESSION WHICH FURNISHES SUCH BOUNDLESS POSSIBILITIES, WHY IS IT THAT SO MANY SCHOOL KEEPERS DRAG OUT, YEAR AFTER YEAR, A MONOTONOUS, ROUTINISH EXISTENCE? An existence unmarked by the slightest perceptible improvement: the wearing of cogs and wheels the only change; groveling in the dust, with the muck-rake, struggling for straws, unmindful of the golden crown over their head. What is it that "cabins, cribs, confines" those who should be the leaders, the inspirers of men? Is it because too ready an ear is lent to the fashionable pedantry that proclaims, "There is nothing more possible to this profession?" Think of it! *Nothing more possible* to be learned of the human soul, with the laws of its being, the best means for its development! Read history and you will find that these typical wiseacres have stood, throughout the ages, on the walls of man's limited knowledge, and cried out, "There is nothing more; we are the highest product of learning, and we know," even while the pent-up life, surging and throbbing within, crumbles to dust the barriers under their feet.

Nothing more! A distinguished president of a celebrated college said, not ten years ago, though to his credit let it be said he no longer holds to this opinion, that all there was to be learned about the science of teaching could be learned in twenty minutes. There is no doubt that this sentiment prevails among so-called learned men, and is keeping a vast multitude of school keepers from becoming school teachers. *Nothing more!* Scarcely three generations have lived since the inspired plan of educating human beings into freedom, by free common schools, was set in motion; forty-five years ago (1839) North America had its first normal school; seven years ago, its

first professor of pedagogics—nothing more! Science was born in this century, and has not yet reached the school-house door; and there is nothing more to be found for the children. Thought, put into the discovery and application of natural forces, has revolutionized the world during the last eighty years, yet, declare these learned men, thought can do but little more in the discovery of the laws which govern, and the means which develop, spiritual power. Every age brushes away this absurd fallacy of "nothing new," but, like the ghost that will not "down," in every age it again rises to frighten the little souls who put their trust in men.

EXAMINATIONS—COURSES OF STUDY—KEEP US DOWN. If examinations, promotions, "passing," Regent's Questions, are made the end of school work, then progress is an impossibility. What shall we do to be saved? Do? Work out our own salvation with fear and trembling. Take the higher law into our own hands, and work for the child, and not for the examination. The teacher who works for per cents leaves hope behind.

SUPERFICIAL CRITICISMS STAND IN THE WAY OF MANY TEACHERS. Teachers should be extremely careful in the investigation of that which is presented for the good of their pupils. Nothing that is good is too good for children; no thought too profound; no toil too arduous; no sacrifice too great; for the good of the children means happier homes, a better state of society, a purer ballot-box, and the perpetuity of our beloved country. How can we bring prejudice to the study of the highest interests of humanity? Theoretically this seems impossible; practically it is terribly true. There is a class of school keepers whose prejudice and bigotry are so intense that they are utterly incapable of examining fairly any new question of teaching; the harm these obstinate pedants do is not confined to their own pupils, for the very intensity of their prejudices gives them a powerful influence over their subordinates, hindering them also from productive investigation.

CONCEIT OF KNOWLEDGE—OR, AS SOMEONE HAS PUT IT, "IGNORANCE OF IGNORANCE"—IS THE GREATEST BAR TO PROGRESS. Conceit is a malady to which schoolmasterdom is peculiarly susceptible. Living among inferiors, accustomed to authority, and being an authority, feeling the necessity of assuming a knowledge, if he have it not, the school master's vanity and self-esteem is constantly stimulated to a dangerous extent. We read that "the meek shall inherit the earth"; this lack of true meekness may be the reason why the school master has so little of this inheritance. There is but one possible cure for conceit—and that is constant, earnest, impartial investigation and study. An honest search for truth will always bring a humility with which conceit cannot live. "Doubt is the beginning of wisdom," said Descartes. Doubt that you think you know the best. I know a number of good school masters and superintendents, who seemingly have not thought a new thought for the last ten years. Their means are exhausted. Should one of them question seriously any of the commonest details of the work of his schools, and in the questioning go back to principles, the discovery would make him a new man; but seemingly there isn't power enough on earth to lead them to one serious doubt. Like the old farmer, who jogged to mill on horseback for forty years, with a grist on one side and a heavy stone to balance it on the other, because his grandfather had done so, the self-satisfied school master blindly plods his accustomed round.

MANKIND'S ANCIENT ENEMY, LAZINESS, IS NOT THE LEAST CAUSE OF OUR LACK OF SUCCESS. We do not succeed, because we will not pay the price of success, which is hard, persistent work. Many a teacher (I know one very well) has been crippled all his life because he would not do the technical work in writing and drawing necessary to the teaching of those and other subjects. Drawing is an extra right arm to any teacher who has the power to illustrate with crayon. The prayer on the lips of many a teacher is, "Deliver us from the drudgery of the school-room." Let us join with all the children in echoing that very laudable prayer.

OUR MENTAL AND SPIRITUAL GROWTH INTO HAPPINESS DEPENDS MAINLY UPON OUR IDEAL OF TEACHING. A genuine, persistent enthusiasm for teaching is the direct product of an exalted ideal. An attainable ideal is a misfortune. I have known teachers to reach their ideals in two or three years, and the remainder of their sad lives is being spent in denying that there is anything more to learn about teaching. It seems to me that Fröebel's ideal is the one to cling to, however vague it may at first appear: *the harmonious development of the whole human being, body, mind and soul.* In good, round Saxon, this ideal means that teaching and train-

ing should make the very best out of every child. Or, the teacher works out God's design found in the possibilities of human growth. Every discovery of a new possibility, a new means, or a new adaptation of means to mind growth, expands the ideal and gives a new stimulus to enthusiasm and energy. Under this ideal the teacher becomes a humble, constant and persevering student. The influence of the warmth and glow that always comes from such investigation is the highest *attractive* power of a teacher. On the other hand, the penalty of bad teaching is fearful; it dwarfs and shrivels the soul; it stupefies the mind and stiffens the body. Good teaching reflects its glory back upon the soul of the teacher.

WHAT SHOULD WE STUDY? That which lies nearest you; the lessons for to-morrow; the subjects that you are teaching, and principles that govern the methods of teaching these subjects. Many teachers, animated by a laudable ambition, study subjects that lie outside of their work. This is proper and right, *after the subjects that you teach are mastered.* Struggling to master the subjects you teach, brings you nearer and nearer your pupils. These subjects lead out naturally to all other subjects. Seek first the highest good of your pupils. Let all your work, all your thoughts, all your prayers, center in realizing God's design in them and unto you will come culture, power, and—*happiness.*

A VISIT TO GERMAN SCHOOLS.

(Continued from December Number.)

Notes of a professional tour to inspect some of the Kindergartens, Primary Schools, Public Girls' Schools, and Schools for Technical Instruction in Hamburg, Berlin, Dresden, Weimar, Gotha, and Eisenach, in the Autumn of 1874, with critical discussions of the general principles and practice of Kindergarten and other schemes of elementary education.

BY JOSEPH PAYNE, AUTHOR OF PAYNE'S LECTURES.

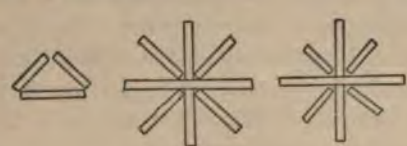
VISIT TO HAMBURG.

Nothing in the early education of children is of more importance than the cultivation of their observing powers by means of the objects with which they are in immediate contact. The names of the children themselves, their age, the number of the members of their families; the names and direction of the streets they pass through in coming to school; the number of houses in these streets, the shops of various kinds in them; the animals they meet with; the carts, wagons, coaches, etc., that they have seen in the way; the weather, with its various incidents; the trees growing in the neighborhood, the river flowing near them, the hills seen from a distance, the fields in which they play, or those they pass by in taking walks, the soil of the fields, the crops growing in them, the occupations of men that they witness; the smithy, the barn, the threshing-floor, the carpenter's shop, the sowing, plowing, haymaking, reaping, harvesting, etc.;—to all these matters their attention should be directed, and *the results of their own observation, not the observation of the teacher,* elicited. Then, descending into particulars, let each child tell how many rooms there are in his home, how the rooms are used, the color of the walls, the pattern of the paper; what the houses are built of, how many windows, doors, chimneys, etc.; have they gardens? what is grown in them? what flowers, herbs, vegetables, trees, etc.? Then the school-room—how many walls, windows? how many desks, tables? how high? how long?—the dimensions being referred to an actual rule and measured by themselves. Then let them say how many books there are on the table; how many leaves in a given book; how many lines in a page; what is the weight of a book or any other object (ascertained by actual weighing it themselves with scales); also the weight of a given object, guessed at by poising it in the hand, and then let the accuracy of the guess be tested by weighing; how far is a tree, a pool, the end of the playground, off, to be guessed at, then tested by measuring done by themselves; how high is a wall, ascertained by counting the layers of bricks and measuring the thickness of a brick, etc., etc. In all these exercises, which are numberless, the actual observation of the children, their own personal experience, should be the means and the limit of the knowledge. Nothing need be told them but conventional names—their senses and their minds should do the rest, without help from others. It is truly wonderful that all exercises of this kind are, as a rule, unknown in our primary schools, where they would be especially valuable—the result being that the scholars go forth into the world with eyes that do not see, ears that do not hear, and minds undeveloped. The knowledge of things that lie about them in daily life, knowledge which Milton emphatically points out as the prime wisdom, is studiously ignored. They are left "unpracticed, unprepared and still to seek;" and what is even more important, the consciousness of their power to acquire such knowledge by their own efforts is never awakened.

I visited the Fröbel-Verein Institute for training (1) kindergarten nursery governesses, and (2) kindergarten teachers. This institution has also

a private kindergarten in connection with it, for the practice of the teachers, but this I did not see. Mrs. Goldschmidt kindly accompanied me, and introduced me to the intelligent head-mistress and the young novices, who numbered about forty. These pleasant-looking maidens sang for my entertainment some pretty songs, accompanied by the piano, and further indulged me with two well-enunciated recitations, together with a specimen of the movement-play adapted to the children of the kindergarten. I was very favorably impressed with the earnest interest manifested throughout, and only regretted the narrowness of their accommodation. The rooms were small, and not well adapted to the purpose of the institution. The informing spirit, however, appeared active, large, and generous.

Next morning I again visited the same establishment, in order to be present at Professor Hoffman's weekly lesson to the young students. I was much interested by the professor's appearance, and by his quiet, appropriate manner toward them. They too, on their part, seemed to have a perfectly good understanding with him, looked very happy in their work, and indulged every now and then in ebullitions of innocent fun, which did not, however, hinder their serious attention to business. The girls were occupied, when I entered the room, in laying down on the table folded slips of white paper forming various figures (*schnürstreifen*). These, I was told, were representations of forms of "Life," "Knowledge," and "Beauty" (*Leben-Kenntniss-Schönheitsformen*). Here are some specimens of them:



There was here a field for considerable ingenuity and taste, but I was surprised to see that the demand for these qualities was strictly confined to an imitation of what the teacher did. The girls were told almost everything—scarcely anything required of them but rigid performance. The argument for this was, that these were the very exercises the children were to be carried through in the kindergarten—an argument plainly insufficient if the object of the Fröbel principle is, as I believe it is, to develop a direct native power. Not only were the girls told in every instance exactly what they were to do, but were also told, even when the case was most obvious, how to correct every mistake. "This is too short," "That is too long," "You must do so and so," were words of constant occurrence, when "Correct this by looking again at the pattern" would have been amply sufficient; as it is an article of our educational creed, that the learner's blunders are to be corrected by himself, and thus to be utilized for his benefit. I was proportionately disappointed at the mechanical nature of this teaching, which made so little demand on the intellect of the pupils. My convictions on this point were strengthened, when, in the second lesson (on network drawing), I heard the teacher, in his criticism of the work, telling the girls most assiduously what was perfectly obvious. "This line is not straight," "These lines are not wide enough apart," "This line should be horizontal, that perpendicular," etc.—remarks all perfectly just, but also perfectly unnecessary in the case of girls of sixteen or seventeen years of age.

This vice of "telling" seems quite ingrained in teachers generally, and is very commonly even regarded as a virtue. But I hold it to be a fundamental canon of teaching, never to tell a pupil what he can find out for himself; and the canon is, I am bound to assert, violated to a very great extent (I cannot, of course, say universally) in the training-schools for kindergarten governesses. The consequences are naturally seen when these governesses take the charge of children themselves; and hence the tendency to formal mechanism, on which I have already made some remarks. It may be said, perhaps, with some truth, that Fröbel himself, by laying down a definite plan of training, through his "gifts," and by his strongly insisting on its strict observance, countenanced and authorized to a certain extent mechanical action. This, however, is a case in which the "letter killeth," while the "spirit quickeneth"; and I am persuaded that those are very imperfectly acquainted with Fröbel's principles who force their practical application into so narrow a groove; at the same time, I suspect that even Fröbel himself did not firmly grasp the principle, that the child, who is naturally a self-teacher, is to be a self-teacher throughout. The great truth, however, that comes out of Fröbel's researches into the nature of man is, that education consists in an every-sided culture of all the human faculties only. What he means by culture is development, not "telling," which is too generally the antagonist, not the minister, of culture. There is a sense in which it may be truly said, that we know—that is, consciously know—nothing that we are merely

told by others.* What we really know, so as to possess as a part of ourselves—of our organic life—comes out of our personal experience in thought or action. We know, in this sense, what we have felt, what we have acquired by contact with the realities of nature and life; but we do not know, for instance, in this sense, the distance of the sun from the earth, nor Kant's theory of the origin of ideas.

Whatever value may be attached to these remarks, one thing is certain, that in early education we must take as the basis of our operations the phenomena of natural development, the experiences of the children themselves, and on them erect our system of teaching. This is what is meant by Fröbel's great principle, as I construe it, that we must learn, by studying the nature of children, how we are to teach them; just as Bacon taught that we are to learn from nature the laws by which we are ourselves to govern nature. The choicest fruits of Fröbel's ideas will be gathered only when the teachers of the teachers are profoundly impressed with it themselves, and, above all, impress it upon them. This, at present, is not, so far as I have observed, by any means generally the case.

I left Hamburg deeply impressed with the educational activity everywhere manifested, with its noble institutions for early and advanced instruction, and with the generous public spirit of its authorities.

VISIT TO BERLIN.

On the 30th of August I arrived in Berlin, and on the following Monday commenced my mission in that city by visiting a private kindergarten, conducted by Fraülein Sperling, where I found thirty or forty children of from three to seven years of age busily engaged in breakfasting at half-past ten. After their simple repast was over, they commenced "building" with little wooden cubes and tablets. This I found everywhere a very favorite "work" of the children, and one in which they generally display much ingenuity. It consists in forming with the objects just mentioned seats, sofas, columns with pedastals, crosses, door-ways, flights of steps, walls, little houses, etc. The children never seemed wearied in varying these forms in every possible way. It is an exercise suited in all respects to their powers, and by means of it, as I have elsewhere said, "play exhibits the characteristics of art, and 'conforms' (to use Bacon's words) 'the outward show of things to the desires of the mind,' and the child learns not merely to imitate, but to create."* In consequence, too, of the exact geometrical conformity of the cubes and tablets (the dimensions of the tablets having always a fixed definite proportion to those of the cubes), notions of precision and symmetry are necessarily acquired. It is remarkable to see with what zest and earnest seriousness the children engage in this systematic building.

The next exercise consists of movement-games, accompanied by singing; and as I nowhere saw these games better carried out than here, I will describe some of them in detail.

1. *The Sportsman.*—The children forming a large ring, with joined hands, and singing a song adapted to the subject, one of them is detached to represent a midge disporting itself in the sunshine. He runs round the circle, throwing his arms about to imitate flying. Another child is then detached to represent a sparrow, who attacks the midge, and swallows it up—a large demand on the imagination, certainly. The midge vanishes, and the sparrow remains. A hawk (another child) immediately pounces on the sparrow, and despatches him, but not with impunity, for a sportsman, who had been on the watch for the hawk, shoots him, and he falls to the ground, to the great delight of the children, who thereupon utter an animated shout.

2. *The Horse and his Rider.*—One child represents the horse, and another, laying hold of the horse behind, follows him as the rider. They set off very merrily. The horse is fresh, but soon shows symptoms of weariness. The pace slackens. He steps in front of one of the children, who represents the ostler of an inn, gets a bait and a drink, and steps on vigorously. Again, however, the pace becomes slower. He has cast a shoe. He stops at a smithy; the blacksmith comes forward and nails on a new one. The horse goes on again, and comes to the gate of a town, where the rider pays a toll. After a while the pair start for the homeward journey; the rider reaches his house, distributes presents that he has brought amongst his children, and receives their thanks. All is mirth and jollity.

3. *The Seasons.*—One child is selected for each.

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*Faraday was accustomed to say that he never received as a fact what others told him, until, by working upon it himself, he had made it his own. It was a fact to him only when it became fact through his own personal experience.

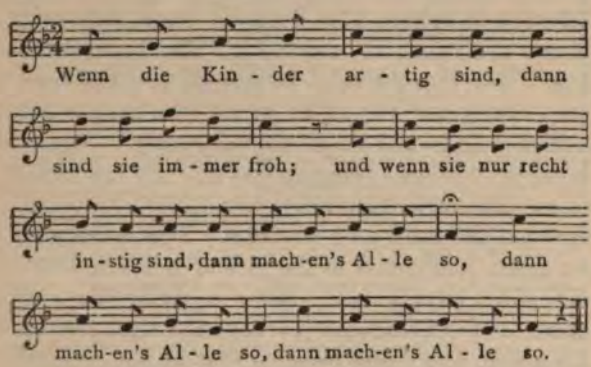
*See *Fröbel and the Kindergarten System of Elementary Education*, pp. 16, 17.

To begin with, Spring stands in the middle of a ring formed by the rest. All lift up their hands and sing the song "Spring" (*Frühlingslust*), to denote joy and satisfaction. Then Summer takes his place, wiping his heated brow. Haymaking begins, and the movements of the haymakers are imitated. Summer's song is sung amid rejoicings. Autumn comes next, and reaping, harvesting and so forth, are represented. Then Winter succeeds, shivering, stamping with his feet, rubbing his hands. Then the four seasons join hands and dance prettily together; and lastly all take part, waltzing with real grace in pairs. My heart, I confess, danced with them.

4. *The Mill.*—Four children placed crosswise form the mill; the movements of their arms, the sails. Then others bring corn to the mill, which turns round and grinds it. It is then carted off amid songs and shouts.

5. *The Cooper's Shop.*—Wooden and steel mallets and chisels are brought in, as well as a plane, sawing block, and a tub. The song begins, and the workmen all hammer together at the tub, the clank of the steel tools giving a pleasing variety to the general effect.

6. *Doing as I Do.*—This consists in the singing a little song by a child in the middle of the circle, who, when he arrives at the word "so," claps his hands, or imitates reaping, or hammering, or what not. Thereupon the song is repeated by all the children, who do together what the leader has done. I give the words and the music as an average specimen (by no means the best specimen) of the sort of thing which exercises very pleasantly the voices and the wits of these little ones.



*The translation is, "When the children are well behaved, then they are always happy; and when they are very merry, then they all do so."

These movement games are, of course, very numerous. Köhler gives in *Die Bewegungspiele der Kindergärten* no fewer than two hundred and seventy-five specimens. They also seem to be entered into by the children with great enjoyment. They practice the limbs, voices, and wits very effectually, and moreover give peeps into the world of business and real life. They afford, too, opportunities for the exercise of the moral virtues, by requiring mutual concession, sympathetic aid, and harmonious co-operation. The little things were very polite (*artig*) to each other, and often displayed much innocent archness and fun. They were certainly very happy.

One morning I went to see the Victoria-schule, one of two noble public schools for girls. The other is the Louisen-schule. The Victoria-schule, which is under the direction of Dr. Haarbrücker, educates about 950 girls; the Louisen-schule, under the direction of the learned philologist, Dr. Mätzner, 850.* A few particulars respecting the former, which, however, for want of time I only partially inspected, may be interesting. It was opened in 1867 with 259 scholars in 7 classes. It has now 950 scholars in 18 classes. Beside the rector there are 28 teachers (5 "head" and 10 "ordinary;" 9 women; 1 teacher of singing, 1 of music, and 2 supernumerary), who are each engaged from 20 to 25 hours per week. The stipend of the rector is 1,700 thalers, that of the first head-teacher 1,400, and that of the rest ranging downwards to 350 thalers per annum. The inclusive school fee is 30 thalers per annum. The curriculum of obligatory subjects consists of religion, the German language and literature, arithmetic, French, geography, history, natural history (with physics, or *Naturkunde*), writing, drawing, singing, needlework (excused in the higher classes if desired), and gymnastics. English is an optional subject, but it appears that in the winter of 1872-'73, out of 279 scholars, who from their position in the school were at liberty to take it or not, only seven failed to do so. The teachers are generally persons of high qualifications, and the results of their teaching are spoken of as very satisfactory. The average number of pupils in a class is about fifty. This indeed is prescribed as the maximum, but it is not strictly adhered to. The religious profession of the parents is in 835 cases Protestant Evangelical, in 107 Jewish, while there are only

* I had a pleasant chat with Dr. Mätzner, who greeted me as a fellow-member of the Philological Society, and he was, although in his seventy-fifth year, radiant with health and intelligence, and told me that he still hoped to complete his unfinished dictionary of Old English, though it would require ten years of hard work to do it.

2 "Dissidents" and 9 Catholics. The school is a city foundation, and is under the direction of the authorities of Berlin. It takes its name from that of the Crown Princess, who has shown much interest in it, and was present at the opening.

As my special purpose was to see elementary—not advanced—teaching, I gave most of my time to a class (the 8th) of about sixty children (ages nine and eleven) who were learning a lesson in arithmetic. They were working a very simple sum in what we call short division, which they did by long division thus:—

79:5		15
5		5
—		—
29	And then for proof,	75
25		4
—		—
4		79

This was all done on the blackboard with the teacher's figures, but by the work of the scholars, who were closely questioned on each operation, and gave the figures which the teachers registered. There was nothing so remarkable in the lesson as the earnest, fixed attention of the children. The order was perfect. All the sixty seemed to give themselves up to the work as if they were one; yet I consider that the number in the class was at least double what it ought to have been; and even the perfect order, which was unbroken, helped to cover the delusion that the minds of all could be suitably and simultaneously developed. Comparatively few pupils were able, under the circumstances, to answer at all, and it too frequently happened that the same individuals came to the front and did the main work of the class. I was shown some paper books, ruled in squares, in which the scholars were required to enter every rule on a separate page, one sum. All these books seemed very neatly kept. The text-book, including only the first four rules, and, as is constantly the case in Germany, without any answers to the examples, was "*Betgradt und Schüff's Recherfibel.*"

I entered one of the French classes in which a lady was the teacher, whose power over the fifty scholars was observable in their fixed attention and apparent interest. The teaching was most careful; the questions she asked on the text, as well as on the grammar, were for the most part correctly answered, but the pronunciation was decidedly bad.

In conversation with Dr. Haarbrücker on the kindergarten, I heard some of the objections, which he fully indorsed, to the kindergarten system—not, however, as he was careful to say, against the principles so much as the practice. The first was, that kindergarten children, when received at the school, were so restless and fidgety that it took two or three months to get them into order. Having been so much accustomed to play, they brought the play-spirit with them, and it was very difficult to exorcise it; and as for making it work, that was out of the question. He could not allow any interference of play with school business. Even in the intervals between the lessons, when the girls got into the fresh air, they were not allowed to play—play disorganized them. They could walk up and down—that was quite enough. A kindergarten child, then, was a nuisance, and the first business the school had to do with her was to clear her head and heart of the fond delusion of associating learning with amusement. Secondly, there was too much routine and drill in the kindergarten. It destroyed originality, and made the children all alike. It was altogether mechanical. It did occur to me to ask Dr. Haarbrücker whether he considered that the ordinary school teaching, in classes of sixty children, for instance, under one teacher, gave much opportunity for developing individual originality, but I forbore, partly because I could not muster my poor German speech-forces for the occasion, and partly because I wished rather to hear than to discuss objections. Thirdly, the system was handed over to ignorant girls not out of their teens, who had not been thoroughly trained by general education, had undergone no examination (he meant by the government authorities), and could do nothing else.

I listened to these objections in silence, but while in my secret heart I acknowledged that there was a tincture of plausibility in them, I felt that on the whole they were unfair and unreasonable. One can easily believe that there may be some difficulty in bringing a kindergarten child, accustomed to much freedom of action and thought, and also to receive much individual attention, all at once under the bonds of routine; but then, on the other hand, one cannot but believe that the quickened intelligence—for this can hardly be denied—would amply compensate in the end for the lack of order at the beginning. And I further cannot help thinking that to assume that the moment the clock strikes and the child is six years of age, she is to cease to be a child, and forthwith to be treated as if all she had heretofore

learned was of no account, is a very large and unwarrantable assumption. That it could be made, however, was only an argument the more for my belief, that to give the kindergarten a fair chance, its course must be extended so as to include the elementary studies of the school proper. The initiation at the arts of reading, writing and arithmetic would necessarily mitigate to some extent the superabundant hilarity and joyousness which the regular schoolmasters of Berlin have, it appears, so much trouble in putting down before their lessons can take effect. I am quite of "Jacotot's" opinion, that "*on ne s'instruit pas en s'amusant,*" but I am also of the opinion of the Fröbel authorities, that instruction in the strict sense of the term ought to find no place in the training of a little child of from three to six years of age. Instruction, as the word denotes, is the systematic building of knowledge into the mind in accordance with a preconceived design, and has therefore nothing in common with the spontaneous liberation of forces which constitute the speciality of the kindergarten, and which aims rather at fashioning the building-stones for future use than at fitting them prematurely into their places. Both the object and the means, therefore, are different in the two cases.

As to the objection that the kindergarten destroys all originality, it is simply amusing. If cultivating the powers of a child on all sides of his being, or in accordance with his nature, does not give scope for originality, then of course we must try what the drill and cramming order of teaching will do for him. It will, however, be very surprising if this should turn out to be the true remedy. The third objection, for which there are some grounds, no doubt, will be met by making the kindergarten governesses more thoroughly competent for their work, through a stricter habit of discipline than is now generally demanded from them. Not one of these objections, nor any others that I heard in Germany against the kindergarten, are of the smallest weight, in my opinion, against the overwhelming evidence furnished by its theoretical soundness and its practical efficiency.

In one of the kindergartens I was present at a lesson, which I could not but pronounce a total failure. About sixty children (aged from three to six)were seated in front of their little tables, making three sides of a square. In front of them was a teacher—a very young one, certainly—with her arms behind her, telling them a story (*Erzählung*). There was no expression in her face, and of course she used no gesticulation. She looked straight before her into the air, not into the minds of children, and tamely proceeded with her na tive, without stopping, and without puttin single question to them. The effect of this s of dealing with her class was very soon evid The children were utterly unconcerned about lesson, consequently paid no attention to it, forthwith began to create for themselves the in est which the teacher had failed to create them. They talked noisily, laughed with e other, pulled each other about, and even, in so cases, left their seats. The teacher seemed no notice the disturbance, but went on unmoved the end, by which time she had lost all cont over the class. The lesson, in fact, had not o accomplished nothing, but had demoralized children. The effect was strikingly different fr what I had witnessed in other cases of *Erz lung*, in which the children's interest was so tensely excited that they could with diffic be restrained from acting out themselves various incidents described. When the teac spoke of the dog leaping along, they threw the selves on the floor to leap, too; and when uttered "bow-wow," they chimed in simult ously with their own little "bow-wows." S held them, in fact, entranced by the interest the narrative. In the case I have just describ the teacher from the first only held the cl by a thread, which soon snapped, and then was confusion. Each wandered on his own w and all the wrong way. While observing wh took place, I could not help in expressing mind the principle, that it is the prime busin of a teacher, especially of little children, to cre an interest in the lesson. Unless teachers that, they work to no purpose. Whatever may the matter in hand, whatever the method e ployed, the interest of the children in it is t essential condition of success. This interest fi and concentrates their attention, calls out th active powers, and ensures their co-operation wi the work of the teacher, and therefore educa them. The method employed is of comparativ little importance. That is a good method, *ex termini*, which secures this co-operation. It good because it educates—that is, stimulates a develops power. When this profitless lesson w over, the children began building, weaving sli of paper, etc.; and now, when they had somethi to do themselves, all was changed. They were earnestly absorbed as they had before been ind ferent, and looked perfectly happy in their wor

[*To be continued.*]

THE PRACTICAL TEACHER.

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FRANCIS W. PARKER, EDITOR.

Honest investigation and a courageous application of the truth when found.

NUMBER AND ARITHMETIC.

(See Page 71, Number V.)

FROM TEN TO TWENTY.—In the last number of this paper I gave reasons why figures should not be taught in the lowest grades, or until 10 has been taught. When ten has been well taught, figures may be taught, so as to arouse great interest on the part of the pupils.

TEACH FIGURES PRECISELY AS YOU TEACH WORDS, BY USING THE SIMPLE LAW OF ASSOCIATION. Show a number of objects and write the figure. Write the figure and have pupils show that number of objects. Show a number of objects and have the pupils write the figure.

This may be done with each number from 1 to 10 inclusive. It is a good plan to have the class at the blackboard; each pupil having a marked-off space two feet wide. The teacher may show the objects (of different kinds) and have pupils indicate the numbers they see by writing figures. The figures should be written neatly in columns. If a pupil is inclined to copy, give him a column to write by himself.

THE GREATEST PAINS SHOULD BE TAKEN FROM THE FIRST TO HAVE PUPILS WRITE FIGURES AND SIGNS VERY DISTINCTLY, TO ARRANGE THEIR WORK NEATLY, and never do one bit of work carelessly. It takes time and patience to train pupils into careful habits, but the training pays a tremendous per cent of interest. Special lessons should be given in making figures. Have pupils practice upon the blackboards, on slates and paper. This may be the order of difficulty in making figures: 1, 4, 7, 0, 9, 6, 5, 3, 2, 8.

THE LEARNING AND MAKING OF FIGURES MAY BE MADE THE BEGINNING OF A GREAT VARIETY OF WRITTEN WORK. First, all the signs may be taught. We will suppose that the class is at the board; the teacher stands so that each pupil can see her and the objects she handles.

Teacher—Please write what you see. The teacher shows 4 blocks and 2 blocks, and then unites them in one group. The pupils write, 4 and 2 are 6. The teacher shows 3 blocks and 3 blocks, uniting them after showing them separately. Pupils write 3 and 3 are 6.

Teacher—I know of a shorter way of writing *and*. The teacher erases *and* and writes + in its place.

Teacher—Now read it (shows 4 blocks and 5 blocks). Write this—and write *and* in the new way. Pupils write 4+5 are 9. In the same way *are* may be erased and = introduced. The purpose of these and the following exercises should not be mistaken: figures, signs, and arithmetical idioms (sentences) are to be associated with their corresponding ideas and thoughts so that the written languages of arithmetic may at sight bring the right thought into consciousness. That this is not generally the case, any teacher may ascertain by a few tests.

TEACH ONE SIGN AT A TIME WITH OBJECTS. Sticks that are readily handled by the teacher and easily seen by the pupils may be used. Class at the blackboard (facing the teacher), crayon in hands, ready to see what the teacher does with the numbers of objects and to describe what they see. The teacher holds 6 sticks in one hand, so that the pupils can limit them by ones, and 3 sticks in the other.

Teacher—See what I do, and tell me with your crayon, on the blackboard. She puts the 6 sticks with the three sticks (unites them). Pupils instantly turn and write

$$6+3=9.$$

If a pupil makes a mistake, or writes carelessly, have him erase his work instantly. If one copies the work of another, give him something to write by himself. Quick and accurate observation is no small item in this training. By showing objects as suggested, have pupils write columns of sentences:

$$6+3=9.$$
$$5+5=10.$$
$$4+3=7.$$
$$9+1=10.$$
$$4+4=8.$$

When pupils can do this work accurately and rapidly, take one step towards the so-called abstract work. Give pupils a number of problems, and have pupils write the work as before.

John has 3 apples and James has 4 apples; how many apples have John and James?

Pupils write,

$$3 + 4 = 7.$$

I gave 6 cents for an orange and 4 cents for a peach; how many cents did I spend?

$$6 + 4 = 10,$$

or

$$6 \text{ cts.} + 4 \text{ cts.} = 10 \text{ cts.}$$

Write five problems upon the blackboard, and have pupils write as above. As soon as possible have pupils read problems from books, using the primary arithmetic precisely as you would use any other reading book.

THE NEXT STEP IS TO GIVE PUPILS THE FIGURES AND HAVE THEM WRITE SENTENCES. The teacher gives orally $5 + 3$, $6 + 3$, $2 + 5$, and the children write rapidly:

$$5 + 3 = 8,$$
$$6 + 3 = 9,$$
$$2 + 5 = 7.$$

Teacher writes questions on board opposite the class, thus:

$$4 + 3,$$
$$7 + 2.$$

Have pupils copy and fill out.

Change *less* to —, and proceed in subtraction as you have done in addition. Show, for instance, 8 sticks; separate them by taking 3 in one hand.

Teacher—What have I done?

Pupils write

$$8 - 3 = 5.$$

Write several columns of sentences in this way, follow by giving oral problems, then written problems, problems from a book, then figures alone

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IT MAY SEEM THAT THE METHOD OF TEACHING ALL THE OPERATIONS TOGETHER IS HERE VIOLATED. By no means. The numbers and their relations of uniting, separating and parting have already been taught. The question before us now is one of associating the ideas of numbers and their relations with written language. The necessity of teaching one idiom at a time is apparent. Those who contend that the different operations should not be taught together have in mind probably the language without the thought, and from this standpoint their deduction is correct.

TEACH THE LANGUAGE OF MULTIPLICATION NEXT. It is an open question whether this sign $\times$, should be retained. There are many slight obstacles in the way of its banishment. I, for one, would not use it.

Class at the blackboard as before. Teacher shows five objects and five objects. Pupils write:

$$5 + 5 = 10.$$

4 sticks and 4 sticks are shown; pupils write:

$$4 + 4 = 8.$$

Teacher—How many fives did you write? (Holding 5 sticks and 5 sticks.)

Pupils—Two fives.

Teacher—How many fours?

Pupils—Two fours.

Teacher—Write $5 + 5$ in another way. Pupils may write two fives are 10. Write it using figures, thus: 2 5s = 10, and 2 4s = 8, may be written.

Show sticks or other objects separated into equal numbers, and have pupils write, as before:

2 2s = 4.
4 2s = 8.
3 3s = 9.
2 4s = 8.
2 5s = 10.

Follow with oral problems, written problems, problems in books, then figures, without problems.

IN THE SAME WAY THE WRITTEN LANGUAGE OF DIVISION MAY BE TAUGHT. Show a number of sticks; separate the number into equal numbers, and ask pupils to write, without any particular suggestions. The results would be worth noticing, for "divided by" is an awkward, misunderstood phrase. Guesses at some attempts:

3 2s in 6.
There are 3 2s in 6
6 has three 2s.
In 6 there are 3 2s.
6 divided by 2 = 3.

Gradually pupils may be led to the conventional form, $6 \div 2 = 3$.

If there is a remainder, as in 5, have pupils write: $5 \div 2 = 2$ and 1 (meaning 2 2s and 1.) The quotient in division is an elliptical phrase. There will be no trouble in thinking if pupils have the fact that *division is finding the equal numbers in a number, and nothing else*, fixed in their minds by repeated observations. Follow the separation of numbers of objects into equal numbers, by oral problems, requiring such separations. Then, as before, use written problems, and fol-

low with printed problems, and figures not applied to things.

LAST OF THIS LINE COMES PARTITION. Hold up 6 sticks; separate them into two equal parts; show one part. Write what part this is (3 sticks) of 6 sticks.

One-half of 6

may be written. Change the one-half to $\frac{1}{2}$, and have pupils write

$\frac{1}{2}$ of $6 = 3$.

By the same process have them write

$\frac{1}{2}$ of $4 = 2$,
$\frac{1}{3}$ of $6 = 2$,
$\frac{2}{3}$ of $6 = 4$,
$\frac{1}{2}$ of $10 = 5$,
$\frac{1}{5}$ of $10 = 2$,
$\frac{3}{5}$ of $10 = 6$.

Follow with oral, written and printed problems, and last of all figures for review.

NOW UNITE ALL THESE IDIOMS IN ONE EXERCISE. Show 5 sticks and 4 sticks, uniting them. Show 8 sticks and separate them into 3 sticks and 5 sticks. Show 5 sticks and 5 sticks.

Teacher—Write this two ways.

Show 10 sticks and separate them into twos. Show 8 sticks and separate them into halves, holding up one-half.

Work as it should appear upon the blackboard:

$5 + 4 = 9$,
$8 - 3 = 5$,
$5 + 5 = 10$,
$2 \cdot 5s = 10$,
$10 \div 2 = 5$,
$\frac{1}{2}$ of $8 = 4$.

Follow this as before with problems of all kinds, and then with quick repetitions of figures until the facts sink in to the automatic. It will be seen that this written work includes every table in ten.

[*To be continued.*]

IDEAS BEFORE WORDS IN TEACHING ARITHMETIC.

W. W. SPEER.

IV.

To make a knowledge of denominate numbers valuable it must be something more than the word knowledge. (?)

Nothing short of contact with the weights and measures will impart clear ideas of the subject. If you are trying to teach denominate numbers by by talking about the foot, pound and peck, you are wasting your time and fixing a prejudice in the minds of your pupils in favor of accepting that which is not understood, or at best, only partially so. It is the experience of most business men that the practical knowledge they have of arithmetic was not acquired in the public schools, but after they left them. I have tested large classes of teachers in distinguishing between the half bushel and the peck, and usually not a third of the pupils of the different classes were able to tell whether the half bushel is a peck, half bushel or a bushel measure. If teachers are content to talk for years about 2 pts. 1 qt. 8 qts. 1 pk. 4 pks. 1 bu., and do not know a half bushel from a tub how imperfect must be the ideas of the children whom they instruct. George Eliot's remark about some people having a religious vocabulary, but no religious experience would apply with force to those who have the language of denominate numbers, but know nothing of the numbers themselve. Recently I called a teacher's atttention to a cubic foot, when she asked, "Is that a cubic foot?" The intonation of her voice and her surprised manner led me to think that she could not have been more astonished had I told her it is a cord. When pupils repeat tables they do not comprehend, they are like a horse on a treadmill which makes some motion but no progress. When repeating 20 grains 1 scruple, 3 scruples 1 dram, 8 drams 1 ounce, 12 ounces 1 pound, they might as well be saying, "Intra mintra cutra corn, apple seed and apple thorn." An unlimited number of tables can be made, each furnishing as much mental discipline as that of any merely memorized table in denominate numbers. As valuable a table can be made of this Mother Goose jingle as of any which stops with the tongue and does not reach the intellect.

20 intras = 1 mintra.....Mi.
3 mintras = 1 cutra.....Cn.
8 cutras = 1 corn.....Co.
12 corns = 1 apple seed..As.

Under this improvised table, I will give and solve a problem in reduction.

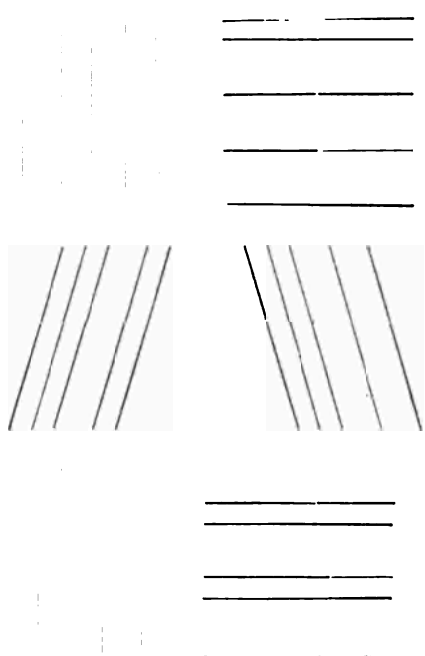
Reduce 3 apple seeds, 4 corns, 3 cutras to cutras:

3 apple seeds, 4 corns, 3 cutras.

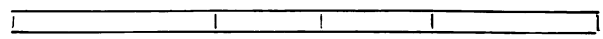
12		
36	corns.	Analysis.—Since 1 apple
4	"	seed equals 12 corns, there
40	"	are 12 times as many corns
8		as apple seeds; to which
320	cutras	add the given number of
3	"	corns, etc.
323	"	

SUGGESTIONS.

The following suggestions may assist in developing ideas of linear measure. Children like to cut sticks and paper. Place a cubic inch before each pupil and let him cut sticks and slips of paper equal in length to one of its edges. Proceed in the same manner with two-inch, three-inch measures, etc. Comparisons should always be made with the standards of measurement. To develop ideas of length there must be comparison. The length of short sticks and the height and width of small objects could be guessed at and measured. Several sticks could be arranged in one line, their length estimated and then measured. The correct measures can be observed and drawn on slates or paper. When too long to be drawn on paper or slate, they can be drawn on the blackboard. Vary the exercise by letting the pupils work vertical, oblique and horizontal lines an inch long on coarse perforated card board. If the pupils are studying the number five, these lines are to be so arranged so as to show what they see in the number.



An aid to teaching number and an exercise which would familiarize pupils with the standards of length, would be the comparison of the feet in a line drawn on the blackboard and separated into as many feet as there are ones in the number which is being taught. Sticks marked off into as many feet might be used instead of the lines. The 'ls should be encouraged to tell all they can see in the line before being questioned. Question so as to present the fundamental operations in the following order, viz: Addition, multiplication, subtraction and division. If a pupil learns multiplication it must be through having made additions; for multiplication is a statement of what is discovered by addition, and division of what has been learned by making additions or subtractions. Suppose the number you are teaching to be three. Place a three foot line on the board and ask the following questions, comparing at first one foot with three feet.



One foot and one foot and one foot are how many feet?

Three ones of feet (or three one feet), are how many feet?

Three feet less one foot less one foot are how many feet?

In three feet there are how many ones of feet (or how many one feet)?

One third of three feet are how many feet?

Compare two feet with three feet in the same manner. The following are the answers to the questions in comparing two feet with three feet.

Two feet and one foot are three feet.

One two feet and one foot are three feet.

Three feet less two feet is one foot.

In three feet there is one two feet, and one foot remaining.

Let the pupils make all the questions they can involving the numbers in three. As they gain in power, present questions similar to the following: Two feet and the half of two feet are how many feet?

One and one-half two feet are how many feet?

Three feet less two feet is the half of how many feet?

In three feet there are how many two feet?

One-half of three feet are how many feet?

When the pupils are familiar with three feet, the term yard can be used instead of three feet. This the teacher can do incidentally as she talks of the measure, and the children will learn to use the term without any conscious effort. When the term yard is used instead of three feet, the language of the comparison will be this: Two feet and one foot are one yard. One two feet and one foot are one yard. One yard less two feet is one foot, etc.

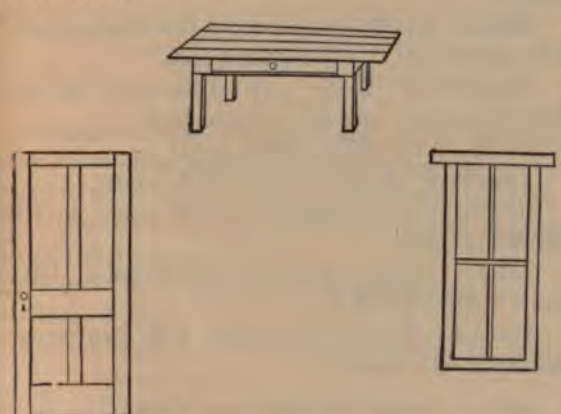
In teaching number by the aid of these measures and other devices, the pupils will gradually acquire approximately correct ideas of length. Do

not hurry. If in comparing numbers you ask the questions for a time in the order recommended above, the pupils will soon be able to tell all that can be told about a number and in the natural order

The following may aid you in teaching the older pupils linear measure. Direct them to draw on the blackboard, free-hand, thirteen vertical lines an inch apart and a foot long. Keep them at this work as long as they are interested. The drawing can be done before and after school, and at the recesses. Show that you observe the work by marking it. With a foot rule, this can be easily done, as the lines ought to outline a square foot.

When the pupils can do quite well with the vertical lines, let them draw horizontal lines, lines leaning to the right, and lines leaning to the left.

Drawing in straight lines the outline of a door, window, side of house, cover of book, top of table, etc., observing the right proportion, will furnish many valuable and interesting exercises leading to close observation and to the development of power to compare.



Place on the blackboard a diagram similar to the following, and request those pupils who are able to write to make one like it. In the third column the pupil should write his estimate of the length or height; in the fourth the result of measuring it, and in the fifth the difference between his estimate and the measure. The work of filling out these diagrams can be done at the pupils' homes.

Names of Objects.	Dimension (Length, breadth or width, height or depth.	Estimates.	Measures.	Differences
Table.	Length.	3 ft. 2 in.	3 ft. 6 in.	4 inches.

A LETTER AND ITS ANSWER.

ORVILLE T. BRIGHT.

The article on "Development" in Fractions in the January PRACTICAL TEACHER prompted the following letter from one of the most popular and effective principals in the country:

My Dear B——: I have read you in PRACTICAL TEACHER with lively interest. In part, amen, as you know. But please show me my error in the following:

To divide is to separate into parts. I can divide 20 cents among five boys equally or unequally. If equally, each boy gets 4 cents. Of course 4 cents is one-fifth of 20 cents, but in the process of distribution I have *divided* the 20 cents, yes or no, so far?

Now then, 20 cents is one-fifth of a dollar, i. e., an equivalent expression for the same quantity. Whatever I can do with one-fifth of a dollar, I can separate 20 cents into five equal parts and that is division. I can separate one-fifth of a dollar as an expression of quantity into five equal parts, and that is or always has been division. I learned it forty years ago. It didn't bother me then and it doesn't now.

Anything but a mathematical point, an actual O, or a physical atom can be divided. This is good philosophy if it is bad mathematics. "DON'T SPLIT TOO FINE."

So far as any statement in the letter is concerned, there is no point at issue. I believe there is thorough accord between the letter taken literally and the article. This answer will be given to certain inferences which the writer of the letter undoubtedly has in mind.

"To divide is to separate into parts." This is undoubtedly true, and if there is any *divisor* in the process it is one of the *equal* parts into which a number has been, or is to be, separated.

"I can divide 20 cents among 5 boys." Yes; and if the division is made equally each boy will receive one-fifth of 20 cents. I know of no other language in which to indicate the process.

There are but two numbers; one is 5 boys and the other 20 cents. There certainly can be no division (arithmetical) of any of these numbers by the other. "In the process of distribution I have *divided* the 20 cents. Yes or no." *Yes*, in the sense of having separated 20 cents into equal parts. The separation or division of 20 cents into five equal parts is, however, only the first step in the process. The result sought is *one* of these equal parts. 20 cents *divided* is just the same amount of money as 20 cents undivided. One-fifth of 20 cents is a very different matter.

"Whatever I can do with 20 cents I can do with one-fifth of a dollar." Yes; but that either of them is to be divided by 5, or 5 boys, I respectfully deny.

"I can separate one-fifth of a dollar into 5 equal parts." That is very true, but what have we when that is done? Five twenty-fifths of a dollar of course. Who can deny it? Is that the result sought from the problems?

"Don't split too fine." I would enter into no discussion in which there is no valuable principle involved. Number should be, *must be*, discussed from the standpoint of the child. We have no choice in the matter. If we attempt to teach what are called abstract numbers and their processes, we can teach only words. One of the most gifted and cultured ladies in Chicago recently said in my hearing, "I am utterly incapable of conceiving an abstract number." Well, children are in the same "fix."

Now, if we must use numbers of things, and the things to be 20 cents, let us suppose two problems for little children, and take the natural working of the child's mind for a guide:

1. Charley, take these 20 cents and tell me how many apples I can buy at 4 cents each.

Charley will lay off the price of an apple as many times as he can, and when he sees that he has 5 fours, he will tell you that he can buy five apples. He must see *all* the piles of apples, however, in order to arrive at this result.

2. Charley, take these 20 cents and divide them equally among those 4 boys, and tell me how many each gets?

This is a harder question for him. I have repeatedly seen the process performed in just this manner:

After a little thought, Charley (who is very young) gives each boy a cent, and then repeats the operation until the cents are all gone. Now he does not care for the five piles, but simply looks into Johnny's hand for his result. In one case the result of his process was 5 four-cents; in the other it was 5 cents.

Shall we preserve these different mental processes of the child, or shall we arbitrarily crush them together to make our process called division cover them both, and then go on as we have done, teaching words?

It was only last week that I asked sixty children who have been in the Fifth grade five months, how many are $\frac{3}{4}$ of 20. All answered instantly, 15.

I then placed 20 blocks on the table and asked that $\frac{3}{4}$ of them be shown, and at the same time that I be told *how* to take the three-fourths of the blocks. To my intense mortification not half of the pupils in the room could do it. When I asked how they got the first answer, "Divide by four and multiply by three," they all shouted.

LESSON GIVEN BY SATIE ARMS.

Reported by MAY PEASLEE, Cook County Normal School.

The teacher brought a two-foot square made of pasteboard before the class.

one sq. ft.	one sq. ft.
one sq. ft.	one sq. ft.

Teacher—What do you see in this pasteboard?

Some of the children said, "A four-foot square," and others said, "Four square feet."

Teacher—Is there any difference between four feet square and four square feet?

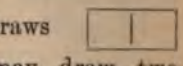
Willie—No, ma'am; there isn't!

Lawrence—A great deal of difference.

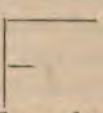
Arthur—There isn't any difference, only its turned around.

Lilly—I think there is a difference, but I don't know what it is.

Teacher—Arthur, you may put two square feet upon the board.

Arthur goes to the board and draws 

Teacher—Now, Willie, you may draw two feet square.

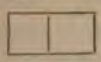
Willie— 

Teacher—* Where does the square come in, Willie?

* Language not good.

Willie tries again, and draws 

Teacher—† That is one foot square; now I want a two-foot square."

Willie— 

Teacher—Ada, can you explain the difference between a four-foot square and four square feet?

Ada—This is a four-foot square: 

and this is four square feet: 

Teacher—Now, Willie, you may go to the board and show me a four-foot square.

Willie goes to the board and draws 

Teacher—What is that, class?

Some of the class say, "A *two*-foot square," and some say, "Four square feet."

Teacher—Now, Willie, show me a *four*-foot square.

Willie draws 

Teacher—Now, Julia, go and show me how many square feet there are in that drawing.

Julia goes to the board and points to each small square, and says there are sixteen square feet in the drawing.

Teacher—Now show me four feet square.

Julia—I can't.

Teacher—Harrison, what do you see in that drawing? 

Harrison—I see squares and lines.

Teacher—How many square feet do you see?

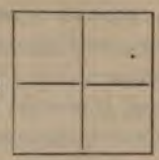
Harrison—Four.

† Teacher should have asked Willie, what he had done.

Teacher—How many feet square do you see?

Harrison—Eight.

Teacher—Harrison, you may draw a four-foot square.

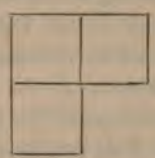
Harrison draws 

Teacher—What has he drawn, Mamie?

Mamie—A two-foot square, or four square feet.

Willie—A two-foot square, or four square feet.

Teacher—Lawrence, you may draw three square feet.

Lawrence— 

Teacher—Now you may draw a three-foot square.

Lawrence— 

The lesson was to be continued the next day, and the majority of the class who were still ignorant of the difference between four feet square and four square feet were told to think about it before the next lesson.

HOW TO TEACH LANGUAGE TO YOUNG PUPILS.

ROBERT C. METCALF, SUPERVISOR BOSTON SCHOOLS.

II.

Give the pupils something to talk about, is a sentence that I copy from the article on Language Teaching in the January number of THE PRACTICAL TEACHER. But teachers must not forget that correct *thinking* must precede all attempts at *talking*, whether by young people or old.

If a story be told to a class for the purpose of reproduction, all of its details must be impressed upon the children's minds before any attempt is made by them to tell or to write it in full.

These details may be fixed by a few simple questions like the following: What was the name of

the little boy? Where was he going? What happened as he came near the pond? How many men were in the boat? etc., etc.

All of the principal incidents of the story having been brought out, the children can be allowed to tell the story, or some considerable portion of it, without interruption.

Sentence-making, like that which would result in answer to the above questions, is not a substitute for talking, but merely a preparation for it.

Little children, even, should be trained to express their thoughts by a succession of sentences, and for this express purpose story-telling has been commended to the notice of teachers.

Assuming that this work (play, it should be to the children) has been fairly commenced, the teacher can safely risk the taking of one more step.

Place a good picture before the class. (A good one for the purpose can be purchased at any of the print-shops for a few cents.)

If the picture be too small for all of the class to see it plainly, divide the pupils into groups and work with one group. The rest can be employed upon some useful busy work.

The group in question are now required to use their eyes, and to study the picture in all its details.

This study should be carefully directed by the teacher.

The pupils should be trained to select some central figure or object in the picture, and from that arrange the details in a systematic order.

If the central or most prominent figure should be a man (and this fact should be determined by the children themselves), one pupil notices that he is seated at a table. This fact is stated in the child's own words. Another notices that the man's hat is on the table, and makes his statement accordingly. A third discovers a mat at his feet; a fourth, a little dog only a few steps away. And thus the study goes on from the figure of the man in the center, to the remotest article of furniture in the room.

Some child may now be called upon to tell the story of the picture all by himself, and, if the work has been conducted skillfully by the teacher, she will not want for volunteers.

If the picture has been studied systematically, the child will be likely to tell his story with considerable method. He will be likely to say that in the picture he sees a man seated by a table. His hat is close to him on the table, and a large mat is on the floor near his feet. A little shaggy dog lies on the carpet a few steps from the table, and is looking up into the man's face.

Thus the story will be told with little interruption from the teacher until the thread is taken up by a second child, and so on to its end. An effort should be made from the very first to have the story told naturally. Little children are very likely to say, I see a man, I see a table, I see a hat, etc. This should be broken up at once by encouraging them to tell the story. If heroic measures are necessary, do not let them use the word see at all until they have had some little experience in story-telling.

After a few weeks of this kind of training the teacher may allow the children to give names to the boys and girls in the same picture. And now little stories may be improvised by the pupils in reference to the questions of the teacher. One boy is named Frank and another Willie. One girl is named May and another Susie. Frank and May are brother and sister. Willie and Susie are cousins who have come to spend a holiday at Uncle Ned's, who proves to be the father of Frank and May. When the story is sufficiently developed, some pupil is allowed to tell the whole of it. Then another gives his version of it, and so on until the time is exhausted.

The teacher can invariably test her success in this exercise by the enthusiasm she is able to create in her pupils. But her steps in this work should be very short ones, or only the brightest children will be able to take them.

HOW TO TEACH LANGUAGE.

HELEN V. JORDAN.

I.

If our need of language is for the expression of thought, and thought is the result of observation and reflection, ought not language culture to mean something more than the study of words?

It is true that words are as necessary to the growth of thought as the brush or colors to the artist who would give distinct and visible form to the fancies which flit through his brain; and just as his ability to realize his conceptions is limited by his skill with the brush, so is our power to impress others with the truths which we see and feel measured by our mastery of words. But how is this mastery to be attained, of what is it the result?

Is not discrimination in the use of words merely an evidence of clearness of perception and fineness of insight? Is not every verbal distinction an index of some difference of thought or of feeling?

Are not words the product of the thought with which they come and which calls them forth? Is not beautiful and forcible expression dependent upon one's power to see, to compare, to deduce conclusions? Is it not the result of delicacy of sentiment and depth of thought?

If it be, is not the primary purpose of a language lesson, as well as of any other, to call into action the mind of the child, to arouse and stimulate his powers of observation, attention and reflection?

Pleasure being one of the strongest incentives to effort, the first thing necessary to carry out this purpose is to give the child something about which it will care to talk or write, something which will arouse those faculties whose action must precede expression. If there is no interest in the subject there will be no motive for inquiry, nothing to induce mental activity or demand expression. If a child be given an object which it cares to examine, its curiosity will lead to close observation, this will result in vivid impressions, and these in the ability to give a graphic description. A child will see much more in a picture which attracts its attention and awakens its imagination than in one at which it looks because it must. To choose subjects wisely we must forget ourselves and enter into the feelings of the children. We may like to study a picture of soft-toned harmonies and shadowy suggestions, but they will probably prefer one distinctly outlined and brilliantly colored.

When we give pupils a story to reproduce, let it be one which they will receive gladly and think of as a good gift worthy of being preserved. Mechanical skill will result more surely than if they feel that they are writing because they must have something upon which to practice spelling and capitalization.

Thought and expression are inseparable. Expression being the only means we have of judging of the progress of a pupil, the only key by which we obtain an insight into his mind, should be carefully noted and considered. To fancy that we are making our pupils thoughtful because we wish them to be so, without any reason for "the hope which is within us," is but deceiving ourselves. If pupils have ideas they will be able to express them intelligibly. It will be a pleasure to them to do so. Vague, incoherent, disconnected statements are the sure indices of confusion of thought.

Some suggestions as to form of work may be needed occasionally, but when one or two neatly executed papers have been secured, the matter may usually be trusted to the pupil's appreciation of the beautiful in his own work.

Reading is indispensable in language work. Those who read, not for the sake of reading, or to fill their minds with facts according to the Gradgrind method, but to make the conceptions of the author their own, will acquire a command of language which would never result from direct word study. Lead pupils to realize that they must *see* what the words they read or hear read are intended to portray. Train them to form distinct mental pictures.

I may, perhaps, make my meaning clearer by describing briefly a lesson given to a class of primary pupils as an attempt in this direction.

Children, if I wished you to make me a picture of a school-house, in how many ways could you do it? Various answers were given, all of which could be included under drawing and painting. When they had no more suggestions, the teacher said: I have a picture of a school-house which looks very much like the one in which I learned to read when a little girl. The man who made it did so without using pencil, brush or colors. "Show it to us!" "How did he do it?" asked the children. Whittier's "In School Days" was then recited to the eager listeners. The instant it was finished one pupil exclaimed, "I know how he made the picture, he wrote a poem!" another said, "He used words instead of colors!" another, "He described the school-house." The impressions they had received were then tested and fixed by questions. How did the floor look? What was on the wall? What kind of seats did they have? What color were the little girl's eyes and hair? Why did the boy pull his cap low over his face? What made the little girl sorry? As the boy grew older did he find that those who got above him pitied him as the little girl did? Why not?

Their stories in prose upon the next day showed that what is clearly outlined in the mind can be reproduced without difficulty.

The practice of asking pupils to form sentences of words not associated with the subjects under investigation differs but little from the memorizing of definitions which need themselves to be defined. Suppose, however, a poem has been selected for a class to read, which contains some words they might not comprehend. You wish them to see and feel the beauty of the scene which the poet has painted. Let there be, then, some study of the words previous to the reading, just as you would remove a curtain from the window before asking one to look at the view beyond.

[illegible]

[illegible]

[illegible]

piece of cardboard two inches long and one inch wide and tests his work. The measures are collected and another drawing can be made if desired. To follow this the word may be written again; this time the class may have directions as to the position in which it shall be placed, as, "Write it above each drawing," or, "Write it at the right hand side." The teacher writes "A flag" on the board for them to copy. In these lessons the object is to lead the pupils to gain clearer ideas about the flag; to know more about its color, form, uses and the material of which it is made; to recognize and be able to make the written form of the word. The first is a language lesson. Next, seeing the written word and learning to recognize it when connected with other known words, is reading. The next busy lesson is a writing and spelling lesson.

During the next period of time the pupil is learning to look at something attentively, so as to know and be able to express what he sees, at the same time he is doing that which children are most delighted to do, "making something." With many objects this work can best be done by having the child model in clay. The work which follows this gives an opportunity for a color lesson, if the pupil uses water colors and a brush instead of a pencil. While the teacher sees the child's drawing or painting, she, at the same time, learns his ideas relative to size. Following the number lesson is an exercise which tests his knowledge of form, and shows what he knows of a measure of definite length. The next lesson is one in direction and place, subjects necessary for children to understand before they begin the study of geography.

DESCRIPTION OF READING LESSON GIVEN TO BEGINNING PRIMARY CLASS.

BELLE THOMAS.

BARNES' FIRST READER, PAGE 14.—Words in lesson known by pupils—boy, dog, this, run, them, yes—to be learned fast, as fast as Script Lesson. Purpose—to use new word and phrase with words in lesson; also with other words in review.

Teacher—Our story to-day is to be about a boy (writing a boy on the board. All recognize this). This boy had a dog (writing "a dog; this is recognized).

Frank—I know a story about a boy and a dog.

Teacher—Do you? Tell it to us.

For a moment the children are permitted to talk about their dogs. As each child expresses his own thought, the tone, emphasis, and inflection are corrected. Through the skill of the teacher, they are led so gradually from this conversation to the reading of the sentences which she writes upon the board, that in almost every instance the pure tone, etc., are still heard.

Teacher—Albert, can your dog run?

Albert—Oh, yes; he runs faster than I.

Teacher—John, how can your dog run?

John—My dog can run fast.

After leading several to use the word fast, she wrote the word upon the board, pronouncing it slowly as she wrote.

Teacher writes this sentence, Can you run fast? *Teacher*—Edna may ask some one this question. Teacher erases the word you, and in its place writes "the dog." The moment she finishes the word, every hand is raised, and Albert is asked to read it.

Teacher—John, how fast can you run?

John—As fast as Arthur.

Teacher—But you did not tell me what you could do.

John—I can run as fast as Albert.

Teacher—Arthur, how fast can you run?

Arthur—I can run as fast as my dog, etc.

Teacher—I am going to write what Arthur said. Teacher writes, "I can run as fast as my dog."

Teacher—Edna, read this for me.

Teacher—Now here is my question; writes, Can you run as fast as I?

Teacher—Frank may ask it. Teacher erases I and writes John.

Teacher—Arthur may ask this question. Now I'm going to write a story which one of you told me just after we came to the board. Teacher writes, My cat cannot run as fast as my dog.

In a moment all show that they have the sentence, except Frank.

Frank—I don't know this word, pointing to the word fast.

Teacher—John, find this word for Frank in another place.

Teacher—Frank, in this sentence (pointing to first one written), how did the dog run?

Frank—He ran fast.

Teacher—You may show me the word which tells us how he ran. Frank finds the word fast.

Teacher—Do you see it in this last sentence?

Frank finds it, and is then able to read. Teacher writes, My hen cannot run as fast as my dog.

Teacher—John, what has the crayon told you?

John reads the sentence. Teacher writes, The rat can run fast.

Arthur reads. Then the teacher added, but John's cat will get it.

Sentences changed or made longer in this way seemed to have a peculiar charm. The writing of them was watched with the greatest interest. She then had all the sentences read in review.

Teacher—Edna, you may read one of the stories and then take it off.

Edna selects the third, reads, and erases.

Teacher—Frank, you may erase three words, if you will tell what they are.

Frank's first word is fast, then hen and run.

This lesson continued ten minutes; the interest did not flag, nor was there a single instance of inattention.

SECOND LESSON.—Books used.—Books on the table.

Frank—Are we going to read from our books this afternoon?

Teacher—Yes, I think so; but let me see first whether you remember anything about our morning lesson. At this every hand is raised.

Teacher—Yes, but I want you to tell me as I write it upon the board.

The teacher then makes a short and rapid review of the first lesson, writing words, phrases, and two sentences: these are all read. Next, the books are passed by one of the pupils: the right page soon found, teacher assisting some of the slower ones. The picture attracts their attention first. A little time is spent in talking about it; the imagination brought in play by naming the boy and dog.

Teacher—All may read the first sentence.

They understand this, and for a moment all are closely studying the first line, with closed lips.

Teacher—John may tell me what the story is.

John reads, but in a loud voice.

Teacher—Albert may tell me.

Albert reads in a quiet, easy tone.

Teacher—Now, John may tell it again.

John is thus reminded, and reads in a far better tone.

Teacher—Look at the next sentence.

Edna—The next one is a question.

Teacher—Very well; who can ask it? Frank may ask me.

Teacher—I wonder if the answer is in the next line.

Albert—Yes, and I can read it.

Teacher—The next is a longer story; read it all.

In a moment the upraised hands show that they are ready.

After going over the lesson thus carefully they are called upon to read each sentence without giving time for the silent reading. The class then read in review the lessons on pages nine and twelve.

GEOGRAPHY—AIDS TO STRUCTURE TEACHING.

ALEX. E. FRYE.

SAND TABLE.

Make a table top about 3x4 feet, with a rim raised two or three inches. Place this top on a small table about 2½ feet high, and fasten at one end by hinges, so that it may be inclined toward the pupils. Strips of wood, such as are used to hold up piano tops, will hold this at any desired angle. A zinc-lined drawer placed under the table for holding sand will be found convenient, although the sand may be kept in a common box or bucket.

The table top should be made of well seasoned pine or white wood to prevent cracking and warping. A coat or two of blue paint to represent water on the table will also help to preserve it.

SAND TINS. (DEC. 3, 1881.)

All the pupils of the class may model or work at the same time upon their desks if they are supplied with "sand tins."

These may be obtained at any tinsmith's for about $2 a dozen. Have them made from a good quality of tin, 14x20 inches, hemmed, rimmed one-half an inch, with the hem turned out; corners soldered.

SAND.

Fine sand of any kind may be used in the modelling. An excellent quality may be obtained from any iron foundry for about 50 cents a barrel. Order the finest sifted moulding sand. Fine beach sand is also good.

CARE OF SAND.

Keep it *moist* by *sprinkling* over it a little water each day *after using*. Do not attempt to stir or mix the sand while wet. Let it remain over night, and the water will filter evenly through it, preparing it in the best possible way for use the next day.

If kept in a covered box or drawer, it will require but little water each day. The exact amount must be learned by experiment, as the quantity will vary slightly with the temperature and humidity of the atmosphere. It retains its form best when only moistened, and should never be so wet that it will stick to the hands. Always put the sand in the box, and cover it as soon as possible after using.

RELIEF MAPS IN PUTTY.

Relief maps of the continents modeled in putty will retain their form for years.

Mix with common oiled putty a little whiting (pure chalk ground in water and dried), or litharge (PbO), till it is quite brittle. Then add a very little japan to make it plastic while modeling, and to dry and set it when finished. Use it immediately after adding the japan. The materials for a large relief map 3x4 feet will cost not more than 50 cents.

A set of these maps to be used as models by the children will save the teacher a vast amount of labor.

RELIEF MAPS IN PLASTER OF PARIS.

Several copies of the same map may be made from plaster of Paris in the following manner: Make an exact model of the map of any size in relief from putty or potter's clay on a board a little larger than the map. Put a rim around this board raised one-half an inch above the highest mountain. Make it water-tight. Place the map on a table, being sure that it is perfectly horizontal. Next mix plaster of Paris in water until the mixture flows freely, and then pour it evenly over the relief map. Mix enough at one time to fill to the top of the rim. Let it stand two or three hours, or until the plaster is firmly set and dried. Then remove the putty or clay and a reversed map or matrix will be found in the plaster of Paris. Now make a rim around this matrix reaching about half an inch above its surface. Fill to the top of the rim with plaster prepared as before, let it remain about six hours, and then take out a completed map. If care is used with the mould, and each map is allowed to dry thoroughly before removing it, any number of maps may be made from the same mould.

A convenient size for these casts is 20x24 inches, and the cost of such maps after the matrix has been made will be about 25 cents apiece if the plaster be purchased at wholesale. All the schools in a large town may be supplied from one set of moulds.

ANSWERS TO CORRESPONDENTS.

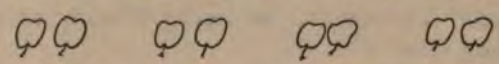
ARITHMETIC.

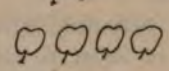
COL. F. W. PARKER:

Dear Sir,—At the earnest request of many of my teachers, and for my own information, I take the liberty of addressing you this letter, hoping you may be able to spare a moment of your valuable time to answer it. Your article on "Language of Arithmetic" in December number of THE PRACTICAL TEACHER has been read by us all with a good deal of interest, and discussed with equal animation. I think the great trouble in the immediate adoption of a revised language of arithmetic is that, with the dawning and expression of the new, there arise all the old forms and formalities, so patiently and laboriously drilled into our youthful knowledge-boxes, to confound and confuse. You say, "What is the difference between $8 \div 2$ and $\frac{1}{2}$ of 8? Show this with objects. By a little close thinking, with the aid of objects, you may find that you do not know what you have long supposed you did know." That is our case exactly. And now to the request of my teachers: How will you show, with the aid of objects, the difference between $8 \div 2$ and $\frac{1}{2}$ of 8? What is the arithmetical language you would use in the case? If it is not asking too much, please answer. "Licht, mehr licht."

SUPERINTENDENT OF SCHOOLS.

Here are eight apples divided by two apples:



here, $\frac{1}{2}$ of eight apples: 

The difference, as you see, is between 4 2s apples and 4 apples. $8 \div 2$, 8 is the dividend, or the number to be separated into a number of equal numbers; 2 is the divisor, or one of the equal numbers into which 8 is to be separated; $8 \div 2 = 4$, or 4 2s. Four is the number of equal numbers into which 8 has been separated; $\frac{1}{2}$ of 8 apples$=4$ apples; 4 is one of the two equal parts of 8; $8 \div 2$ I should call *division;* $\frac{1}{2}$ of 8, *partition.*

READING.

NEW JERSEY.

COL. F. W. PARKER:

Dear Sir, — In looking through THE PRACTICAL TEACHER for October (page 15), I find: "Pupils must never be allowed to say or read a sentence in any but a perfectly natural way." Just what this "natural way" is I am unable to determine. Is it following, in letter and spirit, that old rule, "Read as if you were talking?" I have the

third, fourth, and fifth readers: I let a pupil read; then question him to see if he gets the thought. I had the fifth class read to themselves a paragraph; then I called on one to tell, in his own words, what he had read. Another pupil read aloud the paragraph, and the renderings were compared, and we decided that the first was more nearly like talking. We had continued this practice for several lessons, when one of the boys said he did not think a book read aloud in this way would sound well: or a newspaper either. As the results were unsatisfactory to me, I gradually dropped the practice. I use the American Chatterbox, brimful of entertaining and instructive articles, stories, and pictures. Probably I have not heard an ideal reader, and that is my difficulty, but I certainly think I observe a vast difference between good reading and good talking. Can you aid me in my quandary? I regret that THE PRACTICAL TEACHER is not weekly.

There is but one means of expressing thought orally, and that in English is called talking or speaking. Children learn to talk before they enter school. Talking is a means of learning to read, but talking is not reading. Now, if oral reading is not identical, or should not be identical, with other talking, there must be logical reasons for the difference or differences; what are they? School-keeping *has* made a difference, that is true, but that compound of a whine and a groan, often heard in schoolrooms, is certainly not an improvement upon talking. Neither is that chronic difficulty, so carefully trained into many public speakers, called the "orotund," an improvement upon natural tones. We know that, so far as voice is concerned, every actor and every public speaker makes a desperate struggle to be natural. The wonderful power of Salvini and Wendell Phillips can be traced directly to the talking voice.

I verily believed, when a boy, that I must "bellow," in order to read or speak well, and I bellowed. It is very easy to lead children to think that talking is not oral reading. Use any other tones in teaching reading than those used in talking, and the function of oral reading as a means of teaching reading is destroyed.

PSYCHOLOGY.

WINSTON, N. C., December 29, 1884.

COL. F. W. PARKER:

Dear Sir,—Will you kindly favor me with your opinion as to what is the best, or one of the best, books on elementary psychology for a teacher's class? i. e.: psychology considered more or less from the teacher's standpoint. Your mention of two or three will be appreciated. What I want for my teachers' class is something simple, yet embracing a pretty full course as ordinarily taken by a normal class. I am, very truly,

J. L. TOMLINSON,
Superintendent.

Your question is not an easy one to answer. I have tried to teach psychology for some years, and have not been able to use a text-book; and, furthermore, I have great difficulty in teaching those who have memorized the generalizations, definitions, or pages of a text-book upon mental philosophy. I am thoroughly convinced that a long course of elementary investigations is indispensable as a preparation for the study of text-books upon psychology. This is true of botany, zoology, and all the natural sciences. There is no greater mistake in the use of text-books than to plunge pupils into the mysteries of a text-book, in botany, for instance, before a prolonged and careful elementary study of plants has been made. When this is done, the pages of the proper text-book are luminous with thought; words recall distinct ideas; old relations are recognized, and new ones imagined.

Without this preliminary study, the text-book, to the learner, is generally filled with empty words. Judging by my experience as a teacher of teachers, a year's study of psychological text often produces very barren results. Psychology is one of the most difficult of studies; the slightest advance depends upon the observation or apperception of the facts in consciousness. There can be no real knowledge of psychology without this apperception; nothing will take its place.

One may understand the structure and action of every fibre, ganglion, and cell of nerves and brain; may be able to trace each sensation from an impingement upon the nervous periphery to its registration in the brain, and still be utterly ignorant of the results of the registration. No human eye can trace a sensation of color as it flies to the mind. A thorough study of the avenues of incoming sense products, and of the physical home of the soul, reveals very much that is in a high degree important, but it cannot tell us anything of the essential nature, elements, and relations of thought.

Ideas, notions, and concepts are objects of apperception, as sepals, pistils, and stamens are objects of perception. Among the first results to be attained, in the study of natural science, is a correct habit and method of observation; so in mental science a correct habit and method of introspection must be formed. Indeed, observation of external objects is an essential preparation for observation of internal subject-objects. Very often, graduates of colleges, who have been habituated to word-learning, with the generalizations of psychology glibly on their tongues, are

unable to make one correct mental observation. The immense distance between the laws of human development and the doors of schoolrooms is measured by a barren desert of high-sounding but empty words. Years of close investigation are often necessary in order to comprehend the first page of a condensed text-book upon psychology. I can imagine a good text-book made up of simple directions for orderly and successive investigations, but any definitions of idea, concept, memory, recollection, at the outset, are hindrances in most cases, rather than helps to study.

I have said more than I intended, and have not answered your question. Although I have not tried it, yet I do not know of a better book for the elementary study of psychology, if a book must be used, than "Mental Evolution in Animals," by Romanes; published by Appleton. This book may be studied in connection with "Animal Intelligence," by the same author. "Sully's Psychology" (Appleton) was prepared for teachers, but I am not ready to give an opinion concerning it.

SCHOOL ORGANIZATION.

COL. PARKER:

Dear Sir,—Please give me some suggestions in regard to organizing a school, etc.

Theory and Practice. David P. Page. A. S. Barnes & Co.

School Management. Amos M. Kellogg. E. L. Kellogg & Co., New York.

The Art of School Management. Baldwin. Appleton.

These are helpful books. The first is the best. There is, perhaps, too much organization, and too little teaching. A school can be organized into disintegration, or it may be taught into an organic life.

GOOD THINGS FOR LITTLE FOLKS.

THERE IS NO SURER INDICATION OF PROGRESS IN TEACHING THAN THE CONSTANT APPEARANCE OF NEW BOOKS AND NEW APPARATUS FOR THE CHILDREN

Publishers are more than ready to publish the very best things if there is a sure indication that the people are ready to buy them. Such a beautiful book as APPLETON'S CHART PRIMER must make the publisher's heart dance for joy. Find fault? Certainly, we can find many faults, but before we write them out, we trust every primary teacher in the land will buy and use a set of them. This primer is undoubtedly the most beautiful text book ever made for children.

BOOK OF CATS AND DOGS, WRITTEN BY PROF. JAMES JOHONNOT, AND PUBLISHED BY THE APPLETONS, IS A GOOD THING FOR THE LITTLE ONES OF THE SECOND GRADE.

The day is fast coming when reading and writing will be taught as incidents to the elementary study of natural science, and Brother Johonnot is helping the matter along with his new book.

GINN, HEATH & CO., HAVE ENTERED THE FIELD FOR THE CHILDREN.

Miss Turner's Primer and First Reader is nearly full of good reading lessons. There might have been many more such lessons if many useless single words had been omitted. It is a good book, made by a good teacher.

READING CHARTS. Some day we intend to review the best reading charts, such as Appleton's, Monroe's and Butler's. They all look well together in the same schoolroom. The pictures alone to be used for language lessons are fully worth the price of the charts.

THE FRANKLIN PRIMARY ARITHMETIC is a charming book for children. Two great teachers put their hearts into its making, George A. Walton and Edwin P. Seaver.

ADAM'S SOLAR CAMERA may be obtained of C. F. Adams, State Normal School, Worcester, Mass. It is worth a thousand elementary geographies.

A VISIT TO GERMAN SCHOOLS.

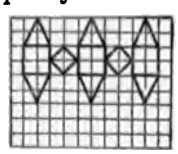
(Continued from January Number.)

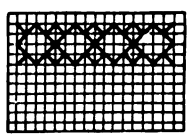
Notes of a professional tour to inspect some of the Kindergartens, Primary Schools, Public Girls' Schools, and Schools for Technical Instruction in Hamburg, Berlin, Dresden, Weimar, Gotha, and Eisenach, in the Autumn of 1874, with critical discussions of the general principles and practice of Kindergarten and other schemes of elementary education.

BY JOSEPH PAYNE, AUTHOR OF PAYNE'S LECTURES.

In another kindergarten which I visited immediately after, I found in a large and handsome room thirty children, who formed one division of the whole number, making in all seventy-four. These were marching and singing very merrily. This exercise was succeeded by "network drawing" (*Netzzeichnen*). Each child had a slate marked with squares, corresponding to those on a large blackboard which stood in view. The

tables were also marked all over with squares. The teacher, calling attention to the blackboard, made a figure, or part of one, and she required the children to make the same on their slates, while she uttered continually (fifty times at least), "one—two," "one—two," etc., so that all the children simultaneously made the same strokes. The rigid mechanism (which also accompanies the teaching of writing, and often of reading, in all the common schools) may have advantages which I failed, on the whole, to appreciate. To me it seemed to have, at least, some disadvantages. It forced the slower children along at too rapid a pace, and gave them little or no time to correct their errors themselves. In fact, the principle of calling on the children to gain conscious profit for the self-correcting of their blunders and mistakes, is scarcely recognized in any of the teaching that I saw in the kindergartens. In this instance especially there was far too much "telling" and ordering to learn, and consequently not the demand there might have been on the intelligence of the children. Still the general result was good. They were acquiring aptness of head and eye, and accustoming the mind to symmetrical form. The figures which ultimately came out were pretty. This is a specimen:





Much importance, not without reason, is attached to this kind of drawing, called technically "Netzzeichnen." It promotes accuracy of observation, and, by securing perfect symmetry, leads to the cultivation of taste, admits of great variety, and undoubtedly excites much interest. It is, moreover, the generally recognized method of instruction (not in the kindergarten only) in the art of drawing. It is employed in the Gewerbeschule of Hamburg, and I saw it in use in most of the elementary schools that I visited. It is suited to the powers of children, and supersedes unmeaning exercises in making isolated straight strokes. It also prepares for writing, which, according to both Pestalozzi's and Fröbel's notions, should follow, not precede, drawing.

I attended on one occasion, by invitation of the teacher (Miss Kohland), a class in a Volkesschule—a school of the same class as our primary schools—to be present at a lesson on a picture, which was the nearest approach that I saw anywhere to a lesson on objects. It was called a lesson in *Anschauung* (observation) a name which it would have better deserved had the objects been real. It was a large colored picture of a village, with a farm-house, a church, trees, cows, a pond, etc. On these the teacher asked a number of questions as to their relation to each other, their nature, uses, etc., all of which were remarkably well answered by the children (about sixty in number, ages eight to ten), who were evidently much interested in the lesson. Here I for the first time became acquainted with a custom, of which I frequently afterward had specimens. As soon as an answer was given which had a special significance, and which involved a distinct proposition, the teacher said, "Repeat that all together," whereupon all the sixty, with one monotonous voice, and that a very loud one, which at first almost startled me, gave it out simultaneously. The teacher had asked, "What is a house?" One of the children answered, "A house is a building." On requiring this to be repeated, they all roared out, "A—house—is—a—building." On the whole, this lesson was a very good and useful one. I witnessed no lessons on pictures in the kindergartens, but I see no reason against, and many for, their being introduced there. They are quite suited, or may be suited, to the powers of the children, and would tend to enlarge the range of their ideas, which are, as I have already said, rather too much restricted within the bounds of the "gifts."

I became aware at Berlin of the existence of some disunion among the unions for promoting the kindergarten system. The Berlin unionists, it appears, do not see eye to eye with those of Dresden, and both, unless I mistake, have some differences with those of Weimar and Gotha. I do not quite understand the quarrel, and will not therefore attempt to explain it; but as it appears to lead to personal remarks, sometimes rather bitterly expressed, on each other, among the leaders of the parties, I learned the fact with much regret. German teachers, unless I do them an injustice from my ignorance, are rather more prone even than those of England to pick holes in each other's coats. Some of the holes seem to me to be very large, and considerably changed the appearance of certain individuals whom I had from afar ideally invested with sound and even splendid dresses. I still prefer, on the whole, to keep my ideal in its integrity, and to believe better things of some of these good men than they apparently believe of each other.

[*To be continued.*]

THE PRACTICAL TEACHER.

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FRANCIS W. PARKER, EDITOR.

Honest investigation and a courageous application of the truth when found.

NUMBER AND ARITHMETIC.

(See page 79, Vol. VIII)

DO ALL-SIDED WORK.—It is a common fault among teachers to take up one side of a many-sided subject, or a device that is often mis-called a method, and by the persistent following of which, produce what, to an inexpert examiner, seems good and even brilliant work. But change this device so as to bring out another side and the "fine work" disappears. In vain may the teacher plead, "The children do not understand you;" the plain fact remains that the teacher and children have been moving in a very narrow way, sometimes called "a rut," out of which they have been uncomfortably jostled by a "new" question.

THE USE OF OBJECTS IN TEACHING NUMBER IS AS IMPORTANT AS THE USE OF OBJECTS IN TEACHING COLOR OR FORM. But the use of objects when pupils can think of numbers and their relations without the presence of the objects WEAKENS THE MIND. I have seen classes fairly enslaved by objects. Ask the children a question and they would patiently wait until they were shown the objects before making the slightest attempt to answer. You ask, "When shall I cease using objects?" Never. "When shall I work without objects?" From the first. "When shall I do one and when the other?" I have already said, when your pupils can think of *numbers* of things and their relations without the help of objects, then put this help aside; if they cannot, then use objects until they can.

But, my dear teachers, above all, carefully discriminate between using *numbers* and using *figures*. Here then, are two sides; one side, thinkin[illegible] in numbers stimulated by the immediate prese[illegible] numbers of things; the other side, nu[illegible] king [illegible] he[illegible] it through the eye—to read a problem. The secret is, the children have had little or no arithmetical reading, one side only has been developed. I have also known the reverse of this to be the case.

From the time the written work begins (second grade) oral and written work should henceforth go hand in hand. This may seem a mixed metaphor, hand and tongue, ear and eye, should go together. Excellent primary reading lessons may be made from number lessons. Write single problems on the board and have pupils read them. A good primary arithmetic may be profitably used in the second grade.

THE USE OF SET FORMULAS IS ONE SIDED.—"Let me ask the question; they'll understand me." Yes, and they would understand *me* if you did not confine your questions in the straight jackets of set formulas. One of my assistants told me, lately, that she had read of a device in the "New York School Journal" like this: "John has ten apples and James has five apples; now what can you tell me about the apples?" "How did you like it," I asked. "I did not like it; it is so indefinite the child does not know what to do," she replied. Now, the device is a charming one, such as those teachers alone can make, who, like dear old Father Calkins, lives near to the hearts of the children. I beg pardon for "old" but must insist upon "father," for many of the so-called Quincy Methods came from a book entitled "Primary Object Lessons." "Now, what can you tell me about the apples?" I can see the children turn their innocent eyes helplessly to the teacher as they read the above question.

Fourteen years ago, in a grand old city by the sea, I visited a famous school. There I watched the use of objects in teaching arithmetic. It was [illegible]imary school, lowest grade. On each of fifty-[illegible]s were carefully placed either three shells [illegible]s or three blocks and two blocks. [illegible]de of the desks were placed the [illegible] shells, on the left the twos of

CHILD, rising.—"I have on my desk three shells and two shells; three shells and two shells are five shells, because three and two are five."

One after another the children rose and said precisely the same thing in the same way, the only variation being in the use of the word, block or shell. With the permission of the teacher I changed three blocks to shells, on the desk of a bright little boy. "Now, tell me what you have," I said. He began bravely: "I have on my desk three — shells and two — blocks; three shells and two—blocks are—are—" and then he fixed an inquiring look upon his teacher. "It is too bad to trouble him so," she said. The little fellow was indulging in the painful delight of the first doubt. That doubt was the beginning of wisdom, and it was "too bad (?) to bother him." I am afraid the little fellow never had many more in that room. Avoid set formulas in giving problems as in other work in number.

POWER TO CALCULATE ACCURATELY AND RAPIDLY, AND POWER TO REASON LOGICALLY, ARE TWO DISTINCTLY MARKED SIDES OF ARITHMETICAL TEACHING.—The tendency in many schools is to make rapid addition, multiplication, etc., the end and aim of arithmetic; as if life were to be lined with endless columns of figures, and the chief end of man was to "add them up." Children can be trained to do wonderful things in this direction; but does it pay? Insist upon accuracy and rapidity in calculation, but is it not a very serious question whether or not a sufficient accuracy and rapidity may be acquired by the use of practical problems and practical work? There is another and still more important question; is there enough truth in this direction to pay for the time spent? Would not a part of this priceless time be more profitably spent in the study of botany, zoology or physics? If we follow that will-o'-the-wisp—"what children can *do*"—these questions lead us into entangled mazes of doubt. If we follow that which a child must do in order to develop his powers on every side, our question will always receive the right answer.

Do that which will develop the most power; the practical will then take care of itself, for in the economy of human growth, that which is genuinely practical is always the best means of developing power.

The power to think in numbers is best developed by the solution of practical problems. If, however, in the solution of such problems, sufficient power of calculation is not acquired, as I think it can be, then separate drills in general numbers must be given. In the solution of problems, hesitation is a sign of thought; in calculation it is a sign of weakness and bad training.

THOUGHT AND EXPRESSION ARE NOT TWO SIDES IN THEMSELVES.—Expression is a means of developing thought. Slovenly expression in construction means slovenly thought, but correct verbal expression is, by no means, an evidence of correct thinking. Make this form of thought the aim of teaching—it may be beautiful, but it is the beauty of death; a body without a soul. Thought will always be defective until it is enhanced by the reflex action of accurate and beautiful expression—Choate and Greeley to the contrary, notwithstanding. With objects and without objects; with tongue, pen and books; with freedom of expression for strong thinking and limitation enough for clearness; with plenty of healthy devices; with reason sufficient to develop the power of calculation; with an accuracy and rapidity that keep reasoning from the clogs of mechanism, and above all, with the single aim of harmonious development, let us strive to free the children of to-day from this terrible bondage—this superstition called the teaching of arithmetic. What astrology was before astronomy, what alchemy was before chemistry, what medicine was before the discovery of the circulation of the blood, so is arithmetic, to-day, to us. Shall it be so to our children?

SUPPLEMENTARY READING.

IT IS NO LONGER A QUESTION AS TO WHETHER CHILDREN SHOULD HAVE PLENTY OF SUPPLEMENTARY READING; THE GREAT QUESTION IS HOW TO GET IT. The shelves of the booksellers are piled high with the best and purest literature. How shall this rich and nourishing food reach the children? There are two simple plans of buying sets of books. One is to buy a number of books corresponding to the average number of pupils in a class; for instance, if the average number is twenty, buy twenty Appleton's First Readers or twenty copies of "Robinson Crusoe." By this plan each child can have a book. The other plan is cheaper; it is to buy three books of a kind, one for the use of the teacher and two for the pupils. Thus when one pupil reads he can pass his book to another and the holder of the second book is ready to read without spending any time in finding the place. This plan has other advantages aside from its cheapness, for a pupil who reads in a class that is not following the text is stimulated to read better, while the class has excellent pra

tice in hearing language. From the very inability to read ahead, the thoughts of the pupils *will* be more concentrated. I advise the use of both plans.

IT IS EASY TO SAY THAT THE MONEY THROWN AWAY UPON USELESS SPELLING BOOKS WOULD BUY AN EXCELLENT LIBRARY FOR EVERY SCHOOL IN THE LAND; but it is quite another thing to persuade school boards to banish this useless rubbish and replace it with that which is absolutely indispensable to real education. There is no other way that I can see, than for teachers, principals and superintendents to take hold of this question vigorously and devise means of procuring sets of books. To have a library of sets of books in each school is, of course, preferable to all other plans, but this is possible only in very intelligent communities or under inspired school boards. What might be called a *circulating library plan* is the cheapest and most feasible. We will suppose that several sets of readers have been purchased—twenty Monroe's Advanced First Readers, twenty Sheldon's Fourth Readers, twenty Seven Little Sisters, etc. Cover the books with stout manilla paper, number, stamp or label them. Make a stout wooden box with sliding cover for each set. Put a strong handle on one end of the box so that it can be easily handled. Have a printed card with the name of the set and the time of bringing with space for the teacher's name, showing when the books were received, the number in set, and the condition (whether injured or defaced) when received. The card might be arranged as the following:

TWENTY SWINTON'S FIRST READERS. SCHOOL CIRCULATING LIBRARY. PROGRESS CO. SET NO. 1.

Name of Teacher	Date received	No. of books	Condition when rec'd	Date of sending off	No. of books	Condition of books	Opinion of books
Mary Goodheart....	Jan. 5	20	1	Feb. 2	20	2	3

A scale of this kind might be used for showing "condition and opinion:"

1. Excellent. 4. Passable
2. Good. 5. Poor.
3. Fair. 6. Very Poor.

In towns and cities having libraries, the lit would be the best place to keep these sets, u the direction of the librarian. All public libra should be brought very near to the schools.

Superintendents of counties, towns or cities may keep the books in their offices, at some central school or book store.

THERE ARE TWO PLANS OF CIRCULATING THESE BOOKS: One, is for each teacher or principal to take them directly from the library, school or book store and have them charged as would be done with a single book, returning them at a stated time. The other plan, which is better adapted to large circuits, was used among the primary schools in Boston. To illustrate, we will suppose that there are ten schools in a township, each school house within a mile or so of some other school house. We will make of these ten schools a circuit, numbering them respectively 1, 2, 3, 4, etc. A set of books is sent by the superintendent or manager to school No. 1. They use this set, then send it to No. 2, who in turn forward it to No. 3, until it finally reaches No. 10, whose teacher returns it to the main office where it may be kept for a new round in the same circuit or transferred to another circuit. Thus a whole county may be divided up into circuits and the books sent *out* from the superintendent's office, and *returned* through each circuit. If there is a sufficient number of sets, each one of the ten schools in the circuit will have one, two, three or more sets at the same time, each forwarding them to the next school in accordance with the plan mentioned.

THE MONEY TO BUY THE BOOKS.—The first place to go is to the school boards. Ask for a few dollars with which to start the plan. Give your reasons clearly and pleasantly. If you have done some excellent work with blackboards, written slips, cuttings from newspapers and old books, the school board will probably be well prepared for your argument. To help yourself is the surest way of getting help from others. Take five dollars, if that is all you can get, and begin. A school entertainment, gymnastic, dramatic or musical, with ten or twenty-five cents admission, has already helped many schools to a precious feast of new books.

be a philanthropic man or
d who has not spent
nels for the South
aded to lay up
ome. Join
have

to do is to *begin*. "To him that hath shall be given."

I have said lastly, but it has occurred to me that there is still another plan. If some wise and kind-hearted book dealer would buy a number of sets, and for a small rental per month loan them to teachers, why not, just as easily as to loan single books to readers? Such a plan might enhance a book dealer's sale of single books. When supplementary reading becomes general in our schools, the percentage of new books sold to those in whom a great love of reading has been aroused, will pay for all the reading books used.

HOW SHOULD THE BOOKS BE USED?—They should be used very carefully. As a general thing, they should be used only in recitations, and only rarely in study. Pupils should not be allowed to take them home. They should have books for home reading, but they should not be taken from these sets. The books should be kept in their boxes when not in use. Three or four sets, of the sets of three, above mentioned, may be put into one box.

These books should be used in teaching reading, history, geography, and science, precisely as other text books should be used. The book is for the child, and not the child for the book. I mean that it is not necessary to read every selection in a book, or to spend much time over certain difficult selections. Read that which will do the children the most good; that which develops the most and the best thought, is the rule to follow.

Make a beginning, then, with a few books. Take good care of them, and year by year add more. Add histories, geographies, biographies, and works of fiction. Any teachers who know of other plans than those here given, will please send them to me, and I will publish them.

WHAT BOOKS SHALL WE BUY?

I have asked Miss Spear and Miss Thomas, of the Cook County Normal School, to prepare a list of books for supplementary reading in primary schools. The following is a partial list of books suited to first, second and third grades:

FIRST GRADE.

Monroe's New Primer; Cowperthwait & Co.

Butler's Chart Primer; E. H. Butler & Co.

Appleton's Chart Primer; D. Appleton & Co.

Swinton's Primer; Ivison, Blakeman, Taylor & Co.

McGuffey's Primer, first 27 pages; Van Antwerp, Bragg & Co.

Monroe's First Reader, first 30 pages; Cowperthwait & Co.

Appleton's First Reader, first 30 pages.

Butler's First Reader, first 28 pages; E. H. Butler & Co.

Barnes' First Reader, first 45 pages; A. S. Barnes & Co.

Webster Franklin Primer; Taintor Bros., Merrill & Co.

SECOND GRADE.

Swinton's First Reader.

Normal First Reader; Porter & Coates.

Model First Reader; George Sherwood & Co.

Monroe's First Reader.

McGuffey's Primer.

Butler's First Reader.

Harvey's First Reader; Van Antwerp, Bragg & Co.

Parker's Supplementary Reader; Robert S. Davis.

Appleton's First Reader.

Franklin First Reader; Taintor Bros., Merrill & Co.

Canadian Educational Series, Primer II.; Gage & Co. Toronto.

McGuffey's First Reader.

Barnes' First Reader.

Royal Reader; T. Nelson & Son, London.

Sheldon's Modern School First Reader.

Our Little Ones, Monthly; Russell Publishing Co., Boston.

THIRD GRADE.

Barnes' Second Reader.

Monroe's Advanced First Reader.

Model Second Reader.

Normal Second Reader.

Sheldon's Second Reader; Scribner & Sons.

Johonnot's "Cats and Dogs;" Appleton & Co.

Butler's Second Reader.

McGuffey's Second Reader.

Monroe's Second Reader.

Swinton's Second Reader.

Franklin Second Reader.

Harvey's Second Reader.

Sheldon's Modern School Reader.

Appleton's Second Reader.

Student's Series Second Reader. Geo. Sherwood & Co.

Lippincott's Series Second Reader.

Swinton's Easy Steps.

Stories for Young Children; Ginn, Heath & Co.

Little Men and Women, Monthly; D. Lothrop & Co.

In making the above list we have been partially guided by the books found in our school library. In several books for the first grade we have designated the number of pages to be read in the beginning. Every teacher who has had experience in using first readers, knows full well the difficulty which arises from new words being introduced so rapidly after the first few lessons. It is well known that the different first readers have about the same vocabulary, and the advantage gained by the child in having the same words in many different relations is plainly evident. Now, if instead of laboring through all the lessons in one book, the child can have several books of the same grade from which he is allowed to read all the *easy* lessons, he has gained a power to learn new words and to read longer sentences with comparative ease. In the second grade we introduce again all the books that have been partially read in the first grade. By reading these from beginning to end, the child has both review and advance work.

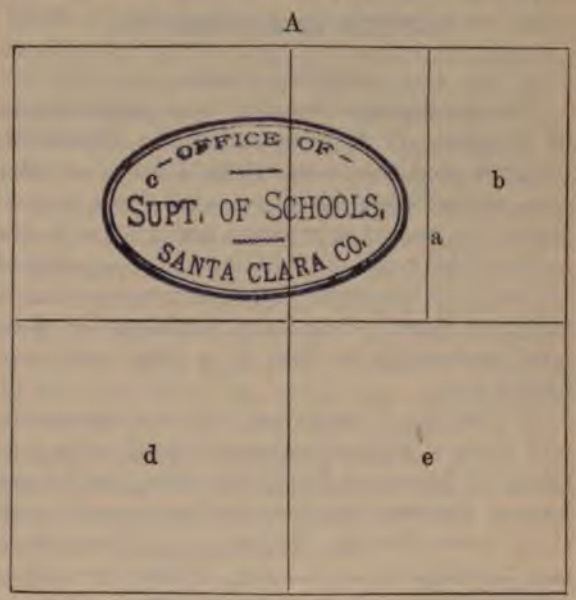
It may seem to some that the number of books in these three grades is unnecessarily large, but those who have tried the experiment of having children read several "easy books" before attempting the more difficult ones, find that the child's progress is much more rapid and *certain* than when he reads one primer or chart, one first reader and then is plunged into a second reader. Great care should be taken to have reading matter simple enough for beginners. A pupil is frequently considered dull, when the real obstacle is the difficult reading. The little child in learning to talk is at first very slow in gaining power to speak easily and fluently, but after a sufficient number of words and idioms are learned, he gains rapidly and without apparent effort. Is it not so with the child in learning to read? If so, then give him plenty of easy, interesting reading matter in the first two grades, and many of the so-called dull pupils will disappear, and learning to read will become a delight both to teacher and children.

MARY A. SPEAR,
BELLE THOMAS.

A good education is that which gives to the body and to the soul all the beauty and all the perfection of which they are capable.—PLATO.

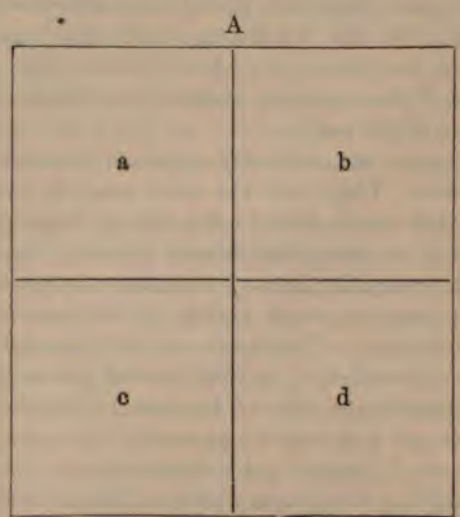
CAN A FRACTION BE MULTIPLIED BY A FRACTION?

A fraction cannot be multiplied by a fraction. A fraction cannot be divided by a whole number. [Sic?]*—*Col. Parker in* PRACTICAL TEACHER.



a is $\frac{1}{4}$ of A; $\frac{1}{2}$ of $\frac{1}{4}$=b, or $\frac{1}{8}$ of A; c+d+e=$\frac{3}{4}$ of A; $\frac{1}{3}$ of $\frac{3}{4}$=$\frac{1}{4}$=c, d, or e. In the first case, is b a *product* gained by multiplication? or, in the second case, is c, d, or e a product gained by taking one number as many times as there are units in another?

Can a whole number be contained in a fraction? or, in other words, can a fraction be divided by a whole number?



*[Sic?] New England Journal of Education.

a, b, and c are $\frac{3}{4}$ of A; b is $\frac{1}{4}$. How many squares of the size of A in b? $b \div A$, or $\frac{1}{4} \div 1$.

Will some one write a practical problem, whose solution necessitates the division of a fraction by a whole number?

FIGURES IN ARITHMETIC.

THOS. M. BALLIET.

The mind grows by acting upon proper objects of thought. It is, therefore, of the utmost importance that the teacher should know at every step, while before his class, what the object of thought is, and what processes are going on in the minds of his pupils. If he has not the power of looking into the child's mind, and seeing what is going on there, while he is teaching, his work must necessarily be done in a blind and haphazard way.

Whilst this is very clear, it is not an uncommon thing at all, in the average school, for pupils' minds to be occupied with one thing, whilst the teacher assumes that they are thinking of something quite different. In geography, the children may be thinking of the map, whilst the teacher assumes that they are thinking of the country; or of a black spot on colored paper, whilst he assumes that they are thinking of London or New York. They may be thinking of the word *island*, whilst he imagines they are thinking of the thing; or of the word *cape*, whilst he takes it for granted in his teaching that their minds are occupied with the thing. Now the word *island*, as an object of thought, is quite different from the thing. It is neither land, nor is it necessarily surrounded by water, and, therefore, is not very accurately described by the definition which the pupil is obliged to memorize. All children like geography, if the teaching makes them think of the surface of the earth.

Figures are arbitrary symbols representing numbers. They bear the same relation to numbers that words bear to the things they signify. There is no more resemblance between the number three and the figure 3 than there is between a turnip and the word *turnip*, or between a man and his name. The word *oak* is neither tall nor made of wood, and, by itself, would give a child a very inadequate idea of the tree. As the child cannot get a concept of an object by learning its name, so it cannot get a knowledge of numbers by studying the figures which represent them.

A child cannot possibly think of number unless he thinks of a number of things (using the word *things* in its widest sense). If the reader wishes to know what is in a child's mind, when he is supposed to be thinking of an abstract number, let him (the reader) try to think of the number five, without thinking of the word *five*, or any symbol of five, and without thinking of five particular things of any sort; what is then in his own mind may be the object of thought in the child's mind, when he tries to think of the same number in the abstract. In point of fact, however, children think of figures, and figures only, when they are supposed to be thinking of abstract numbers.

The proper objects of thought, then, for little children in arithmetic are numbers, not figures; and as they cannot think of numbers in the abstract, they must think of numbers of things. All children like arithmetic in a greater or less degree if the teaching makes them think of numbers, and it is to their credit that they all dislike it when they are made to think of figures merely.

After the pupil has thoroughly learned numbers there comes a time when he can think by means of the symbols of numbers (as he must in algebra) and need no longer think of numbers of things, but this time comes much later than is assumed in a good deal of the teaching in many primary schools, and in the construction of some of our courses of study, as well as in the make-up of many of our text-books on arithmetic. Objects are used at present in the majority of schools not so much to teach number as to *explain figures*, and after this is accomplished, their use is discontinued and figures and rules are taught instead of numbers and principles.

We heard a man of fine intellectual culture assert, not many months ago, that it was unnecessary "quibbling" to speak of a distinction between figures and numbers, that no teacher ever confounded the two. No one who is thoroughly familiar with what is done to-day in the average school, could seriously make such a statement. We have seen not a few primary schools in which arithmetic (?) was taught as a game with figures rather than as a science of number. We have seen schools in which children of the second and third year's grade could not illustrate with objects all of the four fundamental "rules."

To such an extent have figures and numbers been confounded *practically* by teachers who *theoretically* clearly see the difference, that many of the "rules" put into primary arithmetics are based not on numbers, but on the symbols of numbers. If we should change from the Arabic to the Roman notation in our arithmetics, the

language of the "rules" for addition, subtraction, multiplication, and division, would have to be materially altered. Let the reader make the experiment of multiplying or dividing numbers by means of the Roman notation and applying the rules as they are worded in our arithmetics, and see of how much direct help they will be. If the rules must change with the notation, it looks very much as if they were largely based on the *language* of number instead of on number itself. Whilst for practical purposes in business this is probably correct, for educational purposes it makes them valueless. From the extent to which they are made use of, as well as from the mechanical manner in which they are used in not a few schools still, it might be a legitimate inference that teachers even now at times confound figures with numbers.

A fraction is one or more of the equal parts of a unit. The language of figures in which fractions are expressed is no more to be confounded with fractions than figures are to be confounded with whole numbers. A child cannot think of a fraction except as he thinks of a part, or parts, of a thing. If fractions should be taught as means of thought-development, the proper object of thought is the fraction, and not its arbitrary symbol. If children are taught to perform operations with the symbols of fractions, "according to rule," without being able to show with objects what the processes mean, they are taught to play a game with figures that may at first perhaps, from its novelty, be interesting to a few, but that has very little connection with arithmetic as a science of number. If a teacher has been doing work of this kind, let him give his pupils apples, or pieces of paper, and ask them to cut them into parts to illustrate the following operations: $\frac{1}{2}-\frac{1}{3}$; $\frac{2}{3}\times\frac{3}{5}$; $\frac{3}{4}\div\frac{2}{3}$. If they can not do this, let him ask himself the question, what the object of thought is with his pupils when he teaches fractions, and whether they understand the above processes, if they can "go through with the analysis," but cannot illustrate the reasoning concretely. Let him ask himself the question whether he has not been confounding figures with numbers in his teaching, and whether he has not taught arithmetic on the principle that a child can learn the fragrance of a rose by exercising its sense of smell on the word *rose*.

If the reader wishes to see to what extent the rules for fractions in arithmetic are based on the mere *language* of fractions, let him cut an apple into two equal parts, then show that each half is the same as two-fourths by cutting it according to the rule that "multiplying both *numerator* and *denominator* by the same number does not alter the value of the fraction." Let him take one-fourth of an apple and multiply it by two by dividing the *denominator*. Let him take two-thirds of an apple and multiply it by three-fourths, by multiplying the *numerators* together for a *new numerator* and the *denominators* for a *new denominator*. Let him add one-third, one-fourth and one-half of an apple, according to the rule in his arithmetic for reducing fractions to their least common denominator and adding them, cutting the parts into smaller parts, showing the application of his rule, and looking up his *numerators* and *denominators*, both *old* and *new*, as he performs the operation. Let him also take two-thirds of an apple and divide it by two-fifths of an apple, according to the rule for division of fractions; i. e., let him cut two apples of equal size into parts, so that from the one he gets two-thirds, and from the other two-fifths; then let him take the two-fifths, invert it, "and proceed as in multiplication of fractions."

Let the reader now imagine the notation changed, so that instead of writing one-half in figures, with a numerator and denominator, we should have one-half denoted by the letter a, one-fourth by b, one-third by c, etc. Now let him multiply one-half by one-fourth with these symbols, by multiplying "the numerators together for a new numerator, and the denominators for a new denominator"; or let him divide one-half by one-third with these symbols, by inverting the divisor and proceeding as in multiplication of fractions.

All this shows that the statement of the rules for fractions in our arithmetics is not based on fractions, but on the *language* of fractions. If we were to adopt a different notation, their mode of statement would have to be materially changed, and some of them would probably drop away entirely.

For practical purposes in life these rules are perhaps what they should be, giving us, as they do, directions as to how to obtain a result, without reasoning with things, by means of a trick with figures. But in education, where the primary motive is to develop thought, and where the proper object of thought is the thing itself, and not the symbol which denotes it, they are, to say the least, of very little value. They are so widely abused by injudicious teachers that they do positive harm in many schools. After children have been thoroughly taught fractions concretely, so

that they can illustrate any process readily with objects, then these rules could be given to them as devices by which results can be reached without thinking of things. But as long as children must think in things (which means, *as long as they do not understand fractions thoroughly*), such devices, based on the mere *language* of fractions, stand in the way of thought-development. They prevent a large number of children to-day in our schools from getting a clear, thorough knowledge of fractions, and produce in them a dislike for arithmetic.

Experience has shown that children can learn fractions just as early, and with as much ease and facility, as whole numbers. As soon as they know *two* and *three* they can be taught *halves* and *thirds*. There is no reason why the teaching of fractions should be postponed as long as is assumed in some of our text-books on arithmetic. Nearly all the difficulties that teachers meet with in teaching fractions do not properly pertain to fractions as such, but grow out of the *language* of fractions, and are greatly enhanced by the fact that teachers often attempt to begin the teaching of fractions by teaching the language in which they are expressed before they teach the fractions themselves.

In nearly all schools objects are used to illustrate the idea of a fraction, and the meaning of the terms *numerator* and *denominator*, but not to teach the processes of addition, subtraction, multiplication, division, and reduction. The consequence is that the processes are performed, for the most part, mechanically, "according to rule." The popular notion that fractions are more difficult to understand than whole numbers, and that children must study whole numbers for a year or two before their minds are sufficiently mature to understand fractions—a notion that has crept into many of our text-books on arithmetic—shows to how great an extent, by common confession, it is practically admitted that the language of fractions, and the rules based on it, stand in the way of the children's thinking.

QUALITY OF VOICE.

FRANK STUART PARKER.

The quality of the voice depends upon the cavities anterior to the vocal chords. These cavities are changed by the different adjustment of the so-called organs of speech—the lips, teeth, cheeks, tongue, palate (hard and soft), and the uvula; together with the change effected in the cavity directly above the true vocal chords by the action of the false vocal chords; different elevations and depressions of the epiglotis and uvula and the contraction of the posterior pillar of the soft palate. These all modify what we term the quality of the voice, the first series more particularly affecting what is termed the elements of speech; consonants, vowels, and glides; the second, voice proper. Still another element plays its part, and that an important one, in determining the quality of a voice or tone quality, and that is the structure or conformation of the cavities, which, differing with every individual, must essentially modify each individual voice. Any defects which arise from the first two, it will easily be seen, are remedied; because, brought about by improper adjustments, which have become automatic and habitual. The same mechanical processes by which they were acquired may be brought into play; the proper adjustment may be made and practiced until it in its turn sinks into the automatic.

The defects arising from congenital conformation, unevenness of the roof of the mouth, height or depression of the arch of the mouth, small throat, etc., are not to be overcome by education. A distinction must be made between these two first-mentioned effects of quality, and discrimination used in the application of the exercise given. Nothing is more common than a sweet voice with a bad articulation, or distinct articulation with a cramped, unpleasant voice.

Again, the elements of speech may be properly produced, the voice sweet and mellow (no uncommon case with foreigners), and the fault be a substitution of one vowel, consonant, or diphthong for another; as, daug for dog, oi for I, an for on: another common fault with foreigners is the substitution of an un-English element. In prescribing for these defects, I shall treat quality under the two heads of conventional modification of quality, and natural modification of quality. The first is arbitrary and fixed, differing with different nationalities, an adaptation of faculty to act for the purpose of communicating to others that which we feel or think; the second, which is from the first involuntary, inborn, and manifested under the impulse of emotion, showing states, conditions, and moods of the mind. Thus, I may be interested, and the tones of my voice will show it, while the speech will particularize—tell in what I am interested.

Natural modification of voice and natural gesticulation or play of limb and feature are related,

as are speech and all sign language. They are both artificial adaptations of a possessed means, to which adaptations arbitrary means are assigned. They are alike, in that primarily they consist largely of imitations of that which they describe; and in their development culture has a tendency to make the articulations grow more subtle, and each part grows more significant and expressive. The development of every new shade of thought or emotion calls for a better medium of expression.

CONVENTIONAL MODIFICATION OF QUALITY—PRODUCTION OF THE ELEMENTS OF SPEECH.

These elements—consonants, vowels and glides, are produced, it will be remembered, by the different adjustments of the organs of speech, lips, cheeks, tongue, etc. These adjustments are brought about by the muscles which move the various parts mentioned. It will readily be seen that any lack of flexibility and strength in the action of these muscles must very materially affect the articulation or molding of the elements. The ear or eye will guide a person whose muscles are under the control of the will, and are, at the same time, flexible enough to bring, quickly, the cavity into shape; but if these conditions do not exist, then a preliminary practice of a special kind is required.

In the first two years of my teaching, immobility of lips and cheeks, and unwieldy tongues were difficulties for which I was not prepared, probably through lack of comprehension, on my part, of instruction given. The problem dwelt with me day and night, and was finally solved through one of nature's educators — *a baby*. Walking along the street one hot summer morning, my attention was suddenly arrested by a baby sitting on the sidewalk, wholly absorbed in the ma-ma-ma, or some similar infantine babbling that his little lips were awkwardly fashioning. The intent expression of the smutty little face, and the evident concentration of mind, which rendered him oblivious to the noise of the street, passers by, or of my stopping, puzzled me for a moment, when suddenly it flashed across me, *that baby is learning to talk*. Not a very brilliant discovery, some may think, but it opened up to me such a wide field of investigation and suggestion that it will ever remain as one of the most remarkable discoveries in my experience. I began studying babies and prescribing their babblings where I had the muscular defects mentioned, and soon discovered that not only was there a regular succession in which these sounds were produced, but that they were also uniform as to kind. Darwin, who, in proving that babies, no matter of what nationality or by what intellectual environments surrounded, use the same preliminary babblings in learning to talk, has given the teacher an invaluable lesson. Where we follow nature's method we cannot go wrong.

EXERCISE TO GIVE FREEDOM OF MOVEMENT TO THE ORGANS OF ARTICULATION.

FOR THE JAW.—Withdraw the life and drop lazily. Open and shut rapidly. Carry from side to side lazily. Throw forward and back.

FOR THE LIPS.—ma-ma-ma-ma-ma-ma, ba-ba-ba-ba-ba-ba, pa-pa-pa-pa-pa-pa, fa-fa-fa-fa-fa-fa.

FOR THE CHEEKS.—ah-goo, ah-goo, ah-goo.

The two latter exercises are to be repeated rapidly after they can be distinctly articulated. See that the ah-goo draws the cheek backward and upward, and is not accomplished by the simple dropping of the jaw.

FOR THE TONGUE.—Run out the tongue as far as possible, then draw back and touch the uvula. Fold the tongue from side to side, withdrawing the life from the tongue. Fold back the tip. Do this by aid of the teeth. Groove the tongue by bringing together the sides. Draw the tongue in and out rapidly, striking the tip of the tongue against the teeth as it is passed forward and back. The sound heard will be similar to that heard when a dog is lapping water, or where voice is used, the babbling of a baby when it is learning to produce the consonant l, a peculiar combination of b and l being the result.

Rapidly and clearly enunciate the syllables ede, edo, ede, edo.

Trill the consonant r. Trill the consonant r, at the same time running the scale up and down.

1. Drop the jaw lazily (decomposed).
2. Move jaw from side to side (decomposed).
3. Throw jaw forward and back.
4. Repeat rapidly several times in succession — ma, pa, ba; me, re, fe; if.
5. Ah-goo; repeat rapidly, using the cheek muscles.
6. Run out tongue; draw back and touch the uvula.
7. Fold back tip of tongue.
8. Fold over sides of tongue.
9. Groove tongue.
10. Lapping movement of tongue.
11. Ede, edo; repeat rapidly.
12. Trill voice r.
13. Trill voice r, running the scale.

The defects calling for the above exercises will be found in children that are timid or self-conscious; where they are deaf or hard of hearing, and where the imitative power, owing to lack of

ability to discriminate sounds, has not been stimulated sufficiently to give the child the amount of practice necessary for the smooth running of the articulatory machine. Prof. Alexander Graham Bell informs me that he finds exercises of this character invaluable in teaching the deaf to speak. Miss Mary McGowen, a teacher of the deaf, in Englewood, Illinois, says that she has found these exercises of great help in her work, not only with the children that are partially deaf, but with those that are totally deaf. Quite a number of teachers, whose pupils were largely foreigners, have successfully overcome the energizing of the jaw so prevalent among the Scotch; the close-shut jaw of the Irish; the burr of the Germans, caused by the substitution of the back for the tip of the tongue in articulating "r." They are useful, too, in curing the innumerable faults found in our own children, caused by lazy lips, unwieldy tongues and affectations so common among our self-conscious little men and little women.

THE ELEMENTS OF SPEECH.

The elements of speech are consonants, vowels and glides. These take their names from certain marked peculiarities characteristic of each. I will give Prof. Bell's definition of these elements:

A VOWEL.—A vowel is a quality of voice heard while the organs of articulation are in a definite fixed position. It is non-obstructive and syllabic.

A CONSONANT.—A consonant is a quality of voice heard while the organs of articulation are in a definite fixed position. It is obstructive and non-syllabic.

A GLIDE.—A glide is a succession of qualities of voice heard while the organs of articulation are passing from one definite fixed position to an approximately definite position. It is non-obstructive and non-syllabic.

Before taking up the vowel and consonant tables, I wish to give some exercises for the special improvement of the elements. These exercises are those given to me by Dr. Charles Guilmette, a late celebrated teacher and singer of Boston. His articulation was almost perfect, both in singing and speaking. Prof. Lewis B. Monroe acknowledged his indebtedness to Dr. Guilmette in his Manual of Physical and Vocal Training. Many eminent teachers of Boston and vicinity are also indebted to him for his wise and judicious ideas upon voice training.

Mrs. Guilmette has kindly permitted me to publish her husband's consonant and vowel chart. Teachers will find this convenient and useful for class practice.

EXERCISES TO BE USED IN CONNECTION WITH THE CHART.

Place two fingers in the mouth so as to hold the teeth apart without interfering with the tongue; place the tip of the tongue against the back of the lower teeth, depress it through its length as much as possible, and articulate the vowels i as in ill, e as in ell, until they are distinct and the tip of tongue shows no inclination to leave the back of the teeth. Place three fingers in the mouth, observe the above conditions, and articulate u as in pull, a as in art, o as in on. Place a stick an inch in width between the teeth, and articulate e as in ell, a as in art, o as in on, rapidly in succession.

PRACTICE WITH THE VOWEL TABLE.

i as in ill
e as in ell
a as in art
u as in pull
o as in on

Give these five sounds, according to the table, first with the active (loud) whisper, then with voice. See that each element is firmly molded and very distinct. Have each child give the elements separately in order to be sure that they are given distinctly and correctly. Pass about among the pupils during concert work in order to note any careless or slovenly practice. One cannot be too careful in this direction, because articulation being arbitrary and wholly automatic a habit is quickly established, and the habits formed during the plastic age of childhood in this direction, as well as in those of spelling, pronunciation and correct use of language, last one a whole lifetime.

Indeed, one who has been unfortunate enough to have acquired any of these bad habits in youth is never safe, they are ever ready to start unbidden from the depths of consciousness; ghosts that are not to be laid by any after-exorcism of educational device. The lesson to be emphasized is the strength of *early impressions.* I have heard one of the most thoughtful and critical of our American scholars repeatedly mispronounce a word when using it in argument or impassioned address, but when asked, would instantly give the correct pronunciation of that word. Will you say that this man, whose reputation for scholarship in Europe is equal to his reputation in his own country, must be set down as ignorant in that direction? He is not ignorant, but a systematic

education in this particular direction came too late in life to impress the mind strongly enough to retain the impression. This is a truth which a broadly educated mind can grasp; but to a large class the *sine qua non* of thought power is correct pronunciation and correct grammatical construction, and though you speak "with the tongues of angels," and are guilty of one of these errors, they will not hear you: wisdom abideth only where that part of expression, which is wholly arbitrary, a thing of custom, is wholly correct. I repeat, if it is a sign of gross ignorance to misspell a word, or to mispronounce a word, both acts in which the reasoning faculty is not called into play, that are arbitrarily fixed by custom, cannot I logically infer that where articulation is defective that gross ignorance is displayed? Is not articulation the correlative of spelling and pronunciation, in that it is fixed by custom, is arbitrary, and does not call for the exercise of the reasoning faculty?

At our national meeting last summer I listened in vain among our educators, at least among those that I was *enabled* to hear, for some reference to the needs of our schools in this direction, but it remained for Mgr. Capel and Prof. Bell, the one an Englishman, the other a Scotchman, to bring this subject before American educators.

Repeat the vowel i (as in ill) three times, watching the mouth carefully to see that the cavity remains unchanged during the production of the element. This last, the fixedness of the mold, is of the utmost importance in the formation of a beautifully-molded vowel. Go back to the lesson on acoustics, *the shape of the air wave determines the quality;* this shape is determined by the union of the fundamental and harmonic vibrations; every change in the cavities anterior to the vocal chords changes the condition of the sounding bodies (producing the quality), and there is, therefore, a change in vibration which affects the shape of the air wave, and is heard in a change of quality. The fixedness of the mold and the openness of the cavity give purity, roundness and fullness of the vowel element. This is what Dr. Guilmette aimed at in his practice, and can be accomplished in a very short time *with* children, if no careless practice is allowed.

DR. GUILMETTE'S VOCAL CHART.

Permutations of the five organic vowel sounds, i e u a o.

N. B.—Let there be a *prompt* and *firm* molding of the sounds which Dr. Guilmette represents by these characters.

I.	II.	III.
i e u a o	i u e a o	i a e u o
i e u o a	i u e o a	i a e o u
i e a u o	i u a e o	i a u e o
i e a o u	i u a o e	i a u o e
i e o u a	i u o e a	i a o e u
i e o a u	i u o a e	i a o u e

IV.	V.	VI.
i o e u a	e i u a o	e u i a o
i o e a u	e i u o a	e u i o a
i o u e a	e i a u o	e u a i o
i o u a e	e i a o u	e u a o i
i o a e u	e i o u a	e u o i a
i o a u e	e i o a u	e u o a i

VII.	VIII.	IX.
e a i u o	e o i u a	u i e a o
e a i o u	e o i a u	u i e o a
e a u i o	e o u i a	u i a e o
e a u o i	e o u a i	u i a o e
e a o i u	e o a i u	u i o e a
e a o u i	e o a u i	u i o a e

X.	XI.	XII.
u e i a o	u a i e o	u o i e a
u e i o a	u a i o e	u o i a e
u e a i o	u a e i o	u o e i a
u e a o i	u a e o i	u o e a i
u e o i a	u a o i e	u o a i e
u e o a i	u a o e i	u o a e i

XIII.	XIV.	XV.
a i e u o	a e i u o	a u i e o
a i e o u	a e i o u	a u i o e
a i u e o	a e u i o	a u e i o
a i u o e	a e u o i	a u e o i
a i o e u	a e o i u	a u o i e
a i o u e	a e o u i	a u o e i

XVI.	XVII.	XVIII.
a o i e u	o i e u a	o e i u a
a o i u e	o i e a u	o e i a u
a o e i u	o i u e a	o e u i a
a o e u i	o i u a e	o e u a i
a o u i e	o i a e u	o e a i u
a o u e i	o i a u e	o e a u i

XIX.	XX.
o u i e a	o a i e u
o u i a e	o a i u e
o u e i a	o a e i u
o u e a i	o a e u i
o u a i e	o a u i e
o u a e i	o a u e i

Practice the tables slowly and distinctly at first, avoid a rapid utterance until the elements can be surely molded. To break up a very common fault, not by any means confined to children, the running together of words—"lemme go," "I sawim," "a coasting piloteer," "taker car," "letteralone," etc.—use the tables as follows:

TABLE I.—i-e′ i-u′ i-a′ i-o′
i-e′ i-u′ i-o′ i-a′
i-e′ i-a′ i-u′ i-o′
i-e′ i-a′ i-o′ i-u′
i-e′ i-o′ i-u′ i-a′
i-e′ i-o′ i-a′ i-u′

Place the accent upon the second vowel and promptly articulate the two elements.

1. Two fingers in mouth, tip of tongue against back of lower teeth; articulate i as in ill, e as in ell.

2. Three fingers in mouth, tongue as above; articulate a as in art, u as in pull, o as in on.

3. Dr. Guilmette's vowel table—each element distinctly articulated with active whisper.

4. Vowel table distinctly articulated with voice.

5. Vowel table—i-e, i-u, i-a, i-o.

6. Stick between teeth—i followed by e, e followed by a; articulate the elements rapidly but distinctly.

[*To be continued.*]

II. GEOGRAPHY—PRIMARY LESSONS—FIRST TWO YEARS.

ALEX. E. FRYE.

The study of geography commences as soon as the little children begin to observe nature about them. They love nature, and this love of the little ones for pretty objects is the capital for the teacher's work. All children are interested in bright-colored flowers, birds, insects and pretty pebbles; and when they enter school, after a few years of freedom, the work of the teacher should be to deepen and broaden this love. Encourage them to bring to the school the pretty leaves, insects, pebbles, etc., they may find. Always use these little gifts, if possible, in language, drawing, reading and number lessons.

Have a large sand-table upon which the little ones can play. The same delight that children take in digging the sand on the sea shore, or in playing with mud pies, may be made a means of mind growth in the school room as it has already been in nature. Play is the Creator's device for developing His little ones, and all play should be encouraged till the children *grow* out of it. Have the children play with nature, and nature remains their friend and teacher—instead of becoming their taskmaster.

In the sand they will make hills, valleys, roads, houses, farms, rivers, ponds, etc. With little strips of wood or splints they will put in fences, bridges, trees, etc. Tell or read to them short stories and have them make in sand what you describe. Also let them draw upon the blackboard everything they model in the sand.

Try to appreciate the best the child can do however imperfectly it may be done. His concepts of form are, perhaps, not clear, neither is his skill to express developed; and herein lies the opportunity for growth. The child is not conscious of his failings. His picture or model approximates to his ideal, and therefore he is not ashamed of his work, but is ready to try again and again. Now let skill keep pace with the development of thought and he will delight to picture for others what he himself has in mind. The development of skill in the molding and drawing implies *concentration* upon an object of thought. That is, *skill reacts to strengthen thought.*

To the child the little forms in sand are just as truly pictures in nature as the bundle of rags is a beautiful doll. His imagination readily supplies what is wanting in size and color, and the fact that this power of the mind is exercised is the real source of his pleasure. A toy so perfect that nothing is left to the imagination is soon cast aside by the child. He will call the little pile of sand a hill, the little hole a valley, and will think of them as such unless the teacher breaks into this beautiful imagination-world and makes him conscious of its shortcomings.

Let the acts of association between the forms in sand and nature be unconscious, and let the child select, as he naturally will, the little representations in sand, and he is associating signs with his ideas—is preparing for himself a means of recalling the forms of land and water which may afterwards be used by the teacher to assist him in imagining the unseen (?) world. The continents owe their individuality to the relative positions of their natural forms, and through the sand the children may be led to see these forms in any relations. The most important use of the sand is thus to assist the imagination.

Clay may be used to advantage in training the child to *see* and *reproduce form.* To model balls, boxes, apples, pears, peaches, oranges, potatoes, onions, squashes—in fact, any fruit or vegetable—dishes, chairs, tables, hats, shoes, garden tools, animals, crystals, leaves, etc., not only develops the power to *see form,* but it gives the teacher an excellent opportunity to lead the child into the "Fairy Land of Science."

At times have the objects before the class for imitation. Let them also model from memory things they have seen at home or elsewhere. Place an object before them for a short time, then remove it and let them model from memory. Let each make some fruit or vegetable shaped nearly like a ball; some object having the form of a cube, cylinder or cone, each child thinking for himself what he will make. Give opportunity for the imagination to express itself freely, and thus stimulate it to activity.

Keep in mind that the object of the work is *not* the perfect ball or orange, but *power to see* and *skill to reproduce form*. Therefore, select those devices that will call into greatest activity the faculties to be developed.

Since all ideas of form come primarily through the sense of touch, and since the accurate seeing of form depends upon the association of light and shade with sense products of touch, it is of the utmost importance that children be required to *model with the sensitive tips of the fingers*. Patting or rolling the clay upon the desk, cutting or smoothing it with a knife or stick results in about as much development of the power to see form as pouring lead into a bullet-mold or making bricks in a brick-press.

It is an interesting experiment to blindfold the pupils occasionally, and model entirely by the sense of touch. They are then forced to see form through their finger tips. The models made in this way are generally quite perfect. At the close of each lesson press the clay into a box or bucket, and cover it with wet cloths to keep it moist and plastic.

When possible take short field trips with the pupils. Have number and language lessons where the little ones may gather numbers of beautiful things to talk about. The first work in language is to get the children to talk and write fluently by giving them something to talk and write about; and then, when they have acquired a flow of language to correct faults in seeing and expressing. In the fields there is food for thought, and the clatter of busy tongues—evidence of busy minds—gives the teacher an opportunity for the correction of errors, that requires so much hard work in the school room. The corrections will be the more lasting from the fact that they are made while the mind is in a highly active state.

Have little flower beds in the school yard, if possible. Let the children prepare the soil, plant the seed, pull out weeds, water the plants and take general care of them. If there is no opportunity for flower beds out of doors, a few boxes of soil or sand may be used in the school room. Plant corn, beans, horse chestnuts, maple seed, oats, wheat, tobacco, etc.; set out an onion, a turnip and a potato. Make little wooden hoes, spades, plows, rakes, etc., and use them in the boxes.

In this way the children are led, slowly of course, to discover the relations between the soil, moisture and heat that regulate the distribution of vegetation. This kind of work will also cultivate the excellent habit of patiently studying a developing object through successive stages of growth.

Lessons on the common animals and stones may open to the children new lines of observation.

Another line of work may be begun in "season teaching." Study the snowflakes, hailstones, frost on the glass and icicles. Draw the clouds and watch their motions. Discover which clouds bring rain and which seem to bring wind; what winds are generally followed by cold or warm weather or rains. Watch for the first returning birds and the first opening buds. Note which birds remain with us all winter and which fly away, in what direction they go and when.

Mark the shadow of the sun on the floor or wall at a regular time each week and discover the direction of its journey, and when it changes direction. Discover why the sun does not (?) shine every day, and where it is on cloudy days.

In fact, make anything or do anything that will interest the children in objects about them. If you cannot go out into the open fields, bring as much of nature as possible into the school room.

The highest test of good teaching will be the love your little children have for nature.

PAPER FOLDING AS A MEANS OF TEACHING NUMBER.*

MRS. A. H. PUTNAM, KINDERGARTNER, COOK COUNTY NORMAL SCHOOL.

From the points given in the last paper, I think that any teacher who is interested in the work will be able to make her own application of the material to the special wants of the little children. It is not my purpose to give regular sequences of work as used in the kindergarten. I want if possible to give such suggestions as may enable a primary teacher to keep the unoccupied three-fourths of her scholars busy, while she attends to the remaining fourth. I am sure there is much in the kindergarten closet to keep the children not only out of mischief, but to give them profitable work, besides that ordinarily called "slate work." "The cat has four legs" and "the beetle has two eyes" are truths which it is well to have positively stated in black and white, but it becomes rather monotonous after the child has written it fifteen or

*I ought perhaps to say that the principal thing I had in mind in this series of papers, was "busy work," rather than specific number lessons. The editor "improved" (?) my title and made it as it stands. I respectfully announce that I don't propose to be confined to "number."—A. H. P.

twenty times, and I think something else can be substituted, which will hold the child's attention, and furnish food for thought.

Having folded the points of our triangle to the middle of each edge, as indicated in the last lesson, and creased them, ready for the "three-sided tent" (tetrahedron), the children will, I think, find pleasure in this: Lay the folded triangle on the slate (flat) and trace the outline. Make a group of two, three, four, six. Group these in as many ways as you can, e.g., a row of two "tents," one triangle between the two, the position of the edge reversed. Now we have a "boat," a "pan," or a "wash bowl." Draw a four-pointed star (edges of triangle toward center of slate); a border pattern of these stars.

Again: Holding the triangle with its edge toward you, make little dots on the edges of your "picture" one-fourth of an inch apart. (The children should have little card board measures, which they can make for themselves.) Connect the dots at the *right* and *left* edges by horizontal lines. Now connect the dots at the *front* edge with those at the right edge; now with those at the left. In this way the triangle is filled with still smaller equilateral triangles. The child will probably notice the "diamond" and its division into equilateral triangles. This would suggest material for almost endless "number" lessons. But after all, it doesn't seem quite fair that children should be "numbered" so much, when every object presented has so many other attributes.

If the papers are some of them cut of common manilla paper (rather rough, or at least with no sizing), beautiful color lessons can be developed. We fold the paper, and color the outside triangles with wax crayons, or better still, with water colors. The outer ones may be red, blue and yellow, with a white or black or gray center; then the mixed colors may be used. Fifty cents invested in colors and brushes will last a child a year, and this I believe parents would gladly pay; a small outlay on the part of the school board would provide for children who really cannot afford this luxury. Many colors are unnecessary; red, blue, yellow, black and white will be enough. Two brushes, one for broad washes and one for finer work are enough. N. B.—Brushes mustn't be *too* cheap, the good ones are more economical, for the work is better, and the *best* work is the cheapest.

I know it will be some trouble for the children to get their bottles of water to wash their brushes, and they must have a bit of soft rag to wipe them. But, believe me, they will not fail to be thoughtful of these little accessories. If they *are* careless, the forfeiting of the work is punishment enough, and *this* moral lesson will be soon learned.

Again: Borders of a given width may be painted around the edge of each triangle; *double* bands of harmonizing colors are pretty. Surely at no time in his life can a child learn so quickly to recognize and blend (harmonize) colors, than at this early age, when the love of it is so great. Some writer, I think Herbert Spencer, says something like this: That during the first development of any sense or power, is the time when the truths concerning this sense make deepest impressions. It therefore becomes an economy of time to seize this period and present the truths which can be best assimilated.

This is true in regard to color. It is so valuable an aid, too, in "form" lessons; in fact is so subtile an element in all that comes into the consciousness, that we *cannot afford* to do without it. It makes one almost sad to see how barren many school rooms are of this element of beauty, knowing as we all do how dearly children love color, and seeing as we do every day how many grown people have no appreciative sense of it. Ruskin says: "If a child merely daub the paper with shapeless stains, take away the color box till he knows better. But as soon as he begins painting red coats on soldiers, striped flags, etc., he should have colors at command." The old theory that color and its use was only for artists, and for people who had naught else to do with their time, has exploded. No such autocratic notions have a right to a place in these days. The Father in Heaven painted every flower that grows, and every one of His children has a right not only to love this beauty, but to express this delight in the fullest possible way. I don't believe we know, for we have not yet tried with our school children, the moral effect of the right use of thoroughly good, pure, musical tones; harmony of color; an upright, noble bearing. The number, language, *all* that we do now must be done, but ought we to leave the other undone?

I will suggest one or two more modifications of our triangle and then leave it. Having folded the three triangles one over the other, making small ones one-fourth the size of paper (four inches on each edge), fold the single point of each small triangle back to the center of its base. This gives another opportunity to consider *size*. The little tent as we called it, has now lost half of its height; is open on the top like a box. Again the short

upper edges of the "box" are folded back to the base line, and we have one "opened wider" (with a larger open triangle in it). It is of the greatest importance that the children be allowed to use their own language in telling about their work, for through this language, as well as by the work done with the fingers, you judge of the clearness of their conceptions. Having gained this knowledge, it is the teacher's duty to help them to a more adequate expression in every way. The opportunities for a right use of language seem to me to be far greater in work of this kind, which involves the expression of form, color, number, size, position, relation—in fact of every property of matter—than is offered in the ordinary language lesson, where the *thought growth* does not keep pace with expression. Here, I think, the actual interest of the child in all of these qualities compels expression in regard to them, while the *freedom* of the work, and the love of it, positively casts out the fear that so often arises, and, in the form of consciousness of self, is a barrier not only to right expression in work and deed, but even hinders the thought which is trying to ultimate itself in a definite form.

A PSYCHOLOGICAL EXPERIMENT WITH THE WORD FENCE.—The following results were noted one evening in connection with the word fence. It was late in the evening, and my mind was weary:

1. A confused sight of white board fences, such as surround the back yards in New York city, and brown iron railings, such as are seen in front of most of our city houses. This, because I have always lived in the city, I presume.

2. Without the slightest effort on my part there came to my mind an experience which must have occurred when I was about seven years old: A severe storm blew our fence down during the night, the white fence between our yard and the next. A vision of this fallen fence with all the surprised feelings I had that morning when I awoke kept growing upon me until I saw it all quite plainly. The vision was quite sudden, and yet not quite clear at first, and my mind was conscious of not having recalled all that I wished to. I do not remember of having thought of this occurrence during these many years. *

The entire process of the earliest instruction of children should consist in training the faculties for their subsequent work; and for this instruction God's book of the universe is better suited than any books of men.—JOSEPH PAYNE.

A VISIT TO GERMAN SCHOOLS.

(Continued from February Number.)

Notes of a professional tour to inspect some of the Kindergartens, Primary Schools, Public Girls' Schools, and Schools for Technical Instruction in Hamburg, Berlin, Dresden, Weimar, Gotha, and Eisenach, in the Autumn of 1874, with critical discussions of the general principles and practice of Kindergarten and other schemes of elementary education.

BY JOSEPH PAYNE, AUTHOR OF PAYNE'S LECTURES.

VISIT TO DRESDEN.

On the 4th of September I left Berlin for Dresden, and the next day called on Dr. Marquart, one of the directors of the "General Educational Union" (*Der Allgemeine Erziehungsverein*), who received me very pleasantly, and gave me several addresses. He lives in a house in which there is a private school for young ladies which he formerly directed, and which is now under the conduct and proprietorship of Dr. Jänicher. Dr. Marquart introduced me, at my request, to this gentleman, who kindly appointed one of his teachers to take me into the classrooms. I was much pleased with all that I saw in the school; and as there is a kindergarten connected with it, from which children are regularly drafted into the lower classes, and as I was informed that Fröbel's principles were adopted throughout, I was the more interested in my inspection of it. I had not time to do more than visit the kindergarten and the lowest class, but I may add, that from the prospectus I learned that the curriculum embraces religion, German, French, English, history, geography, arithmetic, natural science (*Naturwissenschaft*), calligraphy, drawing, singing, gymnastics, and needlework. Pianoforte-playing is an extra subject. The institute takes day scholars, half boarders, and boarders. The fee for instruction only varies from four thalers to two and a half, according to the class, monthly; and for boarders, three hundred thalers a year in addition. The kindergarten pupils pay twenty thalers per annum.*

I first went to the kindergarten, and found twenty-five nice little children (boys as well as girls) under the care of a pleasant-looking mistress, engaged in folding paper (*Falten*). They all looked busy and happy. I next entered the

*It may interest some English mistresses of boarding-schools to know the outfit that each young lady is required to bring with her on entering this establishment. "One complete bed (without bedstead), with summer coverlet, and two dust-covers, one tablecloth, half-dozen of napkins, two silver spoons, with knife and fork, one cup, one glass, six night-caps, six night-jackets, two day and three night-shifts, twelve pairs of stockings, twenty-four pocket-handkerchiefs, one waterproof cloak, four white, two colored, and two warm dresses, six pairs of drawers, one umbrella, one work-box, one set of toilet basin, ewer, and jug, one chest of drawers."

room for the lowest class of the school, and found the head-master himself teaching the children to read. This was an interesting fact; and I could not but compare it with another fact—namely, that amongst us it is too generally considered that any body is fit to give children their earliest instruction, whereas the initiative into any study, being in many respects the most important part of it, especially requires artistic teaching.

The method was this: The teacher wrote a letter, or a combination of letters, on the blackboard, uttering very clearly, at the same time, the sound of which it was the symbol, and then requested the children to reproduce the signs on their slates, and to utter them at the same time, the utmost attention being paid to distinctness of articulation.* The children were of the ages of six to eight, and the immediate subject was evidently new to them. When I entered, *i-e* appeared on the board—"*i-e* is *i*," said the teacher; "*i-e*=*i*," responded all the children, with one voice. He then went on—"*i-e-h* is *i*." This was followed by "*i-e-r* is *i-i-r*" (the *r* strongly vibrated); "*i-e-s* is *i-s*" (the *s* brought out very sharply). All this was reproduced by the children, who looked with all their eyes, and delivered the sounds with all their voices. They were most earnest, attentive, and orderly. The children then turned to the book which lay before them, where they found whole words containing the elements in which they had been exercised. Sixty of these they went through, the teacher asking the meaning of the words, and then, when one answered, requiring the whole to repeat simultaneously, in a loud voice, "What is meant by *Dieb?*" Answer—"*Ein Dieb ist ein Rauber.*" "Repeat *Ein-Dieb-ist-ein-Raub-er.*"

This practical combination of writing, reading, and requiring the meaning of the words, is general in the elementary classes; and though the meanings given, as appears from the above specimen, were not very definite or deep, they served the purpose; and it was assumed (possibly without sufficient warrant) that, by the simultaneous repetition, the knowledge of one or more became the property of the whole. I scarcely ever heard the teacher give the meaning himself—he generally got it from some member of the class. The reading in the elementary schools is generally remarkably good. It is rare to meet with the stammering and stumbling too frequently heard in our schools. The children know what they are about, and proceed with confidence. In the year 1873, I heard, in the village school of Schwalbach, small children, ten or eleven years of age, reading complete narratives, containing plenty of the long-tailed words with which German abounds, in a style which surprised me; just, in fact, as an educated Englishman would read out an article from *The Times*, explaining the important words and completely expressing the sense.*

I was amused in Dr. Jänicher's class with a little morsel of a child, who, I was told, was English. I asked her, "Can you speak English?" "Yes, I can, and I'm learning to speak German, *I believe.*" She looked very bright and intelligent.

In another class, where writing was going on, I saw some beautiful "English writing" on the blackboard, which the children were copying.

In another class—rather higher up in the school—the children were busy at Netzzeichnen, and produced some very pretty specimens; and, generally, I observed that the kindergarten "works" (not the games), with cubes, etc., found their way, or rather were maintained, in several other classes.

On the whole, I was satisfied that a very good style of teaching prevailed in this school, and I could not but attribute this in a great measure to the principles on which the practice was avowedly founded.

I had an opportunity one morning of conversing with Dr. Paul Hohlfeld (one of the most intelligent men I met with in Germany, and himself a teacher in a great Volks-schule in Dresden) on the objection to the kindergarten system that I had heard in Berlin. He allowed that there was much mechanical and unintelligible teaching in some kindergartens, in which the teachers did not well understand what they were about, and, therefore, failed to elicit the best results of the system; but he assured me, from his experience in the Volks-schule, that the children who had been in the kindergarten were generally superior to others, showed more interest, and "stepped quicker up the classes."

*This method of connecting reading with writing, called "*die Schreibleseemethode*," is very commonly, though not universally, employed in German schools. It is sometimes called Graser's, from the name of an eminent teacher, who gave it a systematic form. It had, however, been suggested (as I learn from Strach's *Geschichte des Deutschen Schulwesens*) by De Launay, a French teacher of the eighteenth century. The method, which appears to be very successful in practice, has the special recommendation, that it requires the learner to take an active part in the process. He co-operates throughout with the teacher, and in fact does the work himself.

*Dr. Morell tells us in his Report in the last Blue Book that "he could count up on his fingers the elementary schools in which this kind of reading is heard in England."

[*To be continued.*]

THE PRACTICAL TEACHER.

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FRANCIS W. PARKER, EDITOR.

Honest investigation and a courageous application of the truth when found.

A sound mind in a sound body seems to be of more importance to teachers than to almost any other class of individuals. Teachers cannot be too careful about whatever conduces to this end—food, cleanliness and exercise. Take the latter in the hearty, health-giving form of play. Exercise the laughing muscles; one hour's play is often, intellectually, worth two hours' hard study. Tell amusing stories, and listen to others who tell such; even permit yourself to make a pun. If driven to this dreadful extremity as a last resort, a pun will revive drooping spirits. Play croquet, lawn tennis, and if you do not think it wicked, play whist. Cultivate cheerfulness, seek healthy, wholesome fun and pursue it; if you feel cross, sit down and laugh. Establish the habit of cheerfulness. Moods become automatic, thoughts turn to accustomed objects, run in accustomed channels. If you permit it, that which is petty, narrowing and belittling will absorb the attention until the power to concentrate the mind upon that which brings life, inspiration and joy is well-nigh lost. A healthy mind never grows morbid; a morbid mind never exists in a healthy body.

Next in importance to keeping well yourself is the good sense to recognize that headaches, bad nerves and bile, do not in themselves make children bad. Have you ever entered the school room in the morning when everything seemed to go wrong? When your best pupil seemed to be laughing at you? When everything they had ever learned seemed totally forgotten? When a fiendish joy possessed the worst boys, in whose bad deeds, for some unaccountable reason, the whole school sympathized? My dear teacher, your pupils are just as good as they were yesterday; the trouble is you are looking at them with jaundiced, bilious, over-worked eyes. If you begin to scold or punish them you are lost—*pro tempore*. The school atmosphere for that day will be blue; the remembrance of it will live with your pupils like a nightmare. Talk very little on such days, unless it be to tell amusing stories; do not try to teach, but set your children to work at their most interesting tasks, and keep still yourself. If an inflamed sentence slips from your lips, say frankly: "Children, I am cross to-day and you must help me to be pleasant."

Never be bilious. I have known a whole school ruined throughout by a bilious principal. He asserted that his pupils were sulky and obstinate. Poor man, it was nothing but the poisoned virus of his own bitterness. Melancholy breeds melancholy; it is inevitable, and if you must be bilious, resign and take the editorship of some educational journal. In criticisms and savage attacks upon theories and systems, biliousness is a real help. Many an editor owes the sharpness and bitterness of his attacks to his gall of biliousness.

A word about criticism. Blessed is that teacher who is under a constant fire of criticism, and *who knows how to use criticism as a means of personal improvement.* A superintendent or principal has no higher or more difficult duty than to criticise the teachers under his supervision.

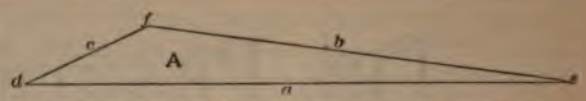
Criticism should be made only after the most careful examination and deliberation. It should be frank and fearless, embracing the good things done as well as those which are wrong. The best adverse criticism is that which brings to light the teacher's greatest fault, for *every* teacher has a greatest fault. When you are criticised, whatever it may be for, or however unjust it may seem, do not try to defend yourself. Thank the one who made it and give the criticism most careful consideration. If teachers would spend only half the time in searching for the just cause of criticism which they spend in defending themselves from the same, their progress would be sure and certain. That no man is a good judge in his own case is an axiom in law that holds true in other professions. The terrible dangers of narrowness and one-sidedness are to be avoided by thoughtful consideration

from many points of view. That condition is unsound and unsafe out of which there is not being evolved a still better condition. The best teachers and the best scholars are those who are deeply conscious of the imperfections of their own work and study, compared with the high ideal which stimulates all their energies. That criticism is the best which faithfully presents a higher ideal, and suggests to the teacher steps or means which lead to its attainment. Superintendents often refrain from criticism for two reasons. First, through fear of hurting the feelings of the teacher; second, because of the apparent hopelessness of the case. The first may be easily overcome by a cordial appreciation of the good things done, and by inspiring his teachers with a love for the work and a desire for better things. One of the surest marks of a good teacher is, that egotism or self-love is entirely subordinated to love of the work.

Even unfair, bitter or malignant criticism may be used as a means to the highest good of the criticised. Such criticisms should drive you to look anew at your work and to the most impartial examination of your principles and methods. There are few criticisms which do not contain some bit of truth. Those who dislike you are ever on the watch for your weaknesses and defects, and do not hesitate, from any considerations of your feelings, to give you and the rest of the world the benefit of their discoveries. Take the criticism as you would one from your dearest friend, test it by the "scientific method" to see if it be true; if it is true, frankly acknowledge your mistake and profit by the criticism by doing better. Defend yourself by your work and not by words. Let malicious criticism drive you to careful self-examination and undaunted persistence. Keep still and go ahead, unappreciated teachers are generally those who fail to appreciate their opportunities.

STRUCTURAL GEOGRAPHY.

Geography is a description of the earth's surface. Structural geography is a description of the solid bodies of earth and rock that rise above the ocean level; to wit, continents and islands. The study of these bodies is the foundation of the Science of Geography. The forms of the continents are simple and regular. Thus a lateral section of four continents, or great subdivisions of land, may be represented by this simple figure:



(*a*) Base of solid, a plane from ocean level to ocean level.

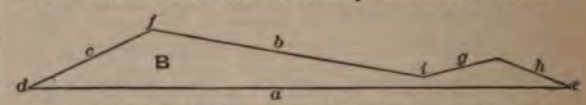
(*b*) Long side or slope from ocean level to line of continental axis; *e* to *f*.

(*c*) Short side or slope from ocean level to continental axis; *d* to *f*.

The continental axis is the line formed by the meeting of the two sides, planes, or slopes *c* and *b*.

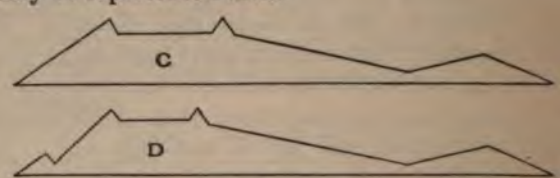
The line formed by the meeting of the plane indicated by *a* with that of *e*, and with *d* is the coast line or outline of the continent.

We have to do with the solid that rises above the plane indicated by *a*. The figure *A* represents the general form of North and South America, Asia and Europe. Of course this general form contains innumerable modifications of forms that are in themselves similar to the general form. The first and most important modification in North and South America may be shown thus:



This divides the continent into two solids—a great and small one. *a*, *e*, *d* and *c* are the same as in *A*. The plane *b* meets the plane *g* at *i*, the lowest point of the two slopes.

The next modifications of the general form *A* may be represented thus:



The order of study is from the simple to the complex. The general form of continents is far simpler than the surface of a town in New Hampshire, or any other mountainous region.

Why should the upraised forms of land be the subject of thought study? This question I will answer by presenting some of the more obvious reasons for the study of structure.

UPRAISED FORMS.

1. The structure of a continent determines its outline, or horizontal form. This fact can be easily seen by running the eye over the map from Patagonia to Alaska, on the Pacific coast, and from Patagonia to Labrador on the Atlantic coast. Take away the Brazilian, Guiana, and Appalachian highlands, and the shape is radically changed. Ice and frozen soil prevent the inroads of the Arctic Ocean on parts of the Siberian coast, and the same is true in the comparatively short strip of lowlands that meets the Arctic Ocean in North America.

2. The distribution of the soil depends upon the length and inclination of slopes. This fact can be seen in any hillock or inclined plane of land surface.

(*a*) Rocks. (*b*) Gravel. (*c*) Coarse soil. (*d*) Fine soil. (*e*) Alluvium.

All these forms of the earth's outer covering may be found in the highest of high lands as well as in the lowest; yet the law of general distribution is mainly as represented.

3. Drainage depends upon the structure.

A.

There is the drainage that appears upon the surface in the form of bodies of water; as springs, brooks, creeks, rivers, lakes, etc.

(*a*) The spring depends upon the outcropping in a slope of a hard layer of soil, clay, or rock, over which water runs.

(*b*) The length of the river depends upon the length of the slope.

(*c*) The rapidity of its current depends upon the inclination of the slope.

(*d*) The volume of water depends upon the area of the two slopes that meet and form its basin. The amount of rainfall, however, is to be taken into account here.

(*e*) The bed of the river is found when the two slopes forming its basin meet, thus determining in general the course of the river. The material out of which the stream hews its channel determines its course within certain bounds.

(*f*) The depth of the river depends upon the size of its basin, the rainfall, and the structural limitations of its bed.

(*g*) Ponds and lakes are generally the impeded courses of rivers.

(*h*) Every square inch of soil in a river basin furnishes its moiety to the soil below it on the same slope, and streams are the main means of transportation.

Thus the chief uses of rivers and lakes, commerce and manufactures, are determined by the slopes that form the river basins.

B.

There is a drainage that consists of the percolation of water underground through soils and rock seams.

(*a*) The amount of water underground depends upon the upper slope that feeds the lower, and upon the rainfall, or upon the impediments to slopes, the marshes and swamps.

(*b*) The time it takes for the water to pass through the soil depends upon the relative density of the soil, the inclination of the slope, and the pressure of the water; that is, increased or diminished by the length or shortness of the slope.

(*c*) The kind of vegetation depends upon the soil and climate. The climate depends upon the height of slope, direction of prevailing winds and distance from the Equator. The prevailing winds are turned and modified in their direction by height of slope. The rainfall depends greatly in many countries, upon the height of slope.

(*d*) The growth of vegetation depends mainly upon the water in the soil. The soil is the flesh and the water the blood of the earth.

(*e*) Animal life depends upon vegetation.

(*f*) Man's life depends, directly or indirectly, upon all the conditions of structure given above.

The history of man has largely depended upon structure. The progress and civilization, the degradation, decline, and death of tribes and nations may be traced directly to structure. The nest places of history were structural strongholds. The Red Sea, the Libyan Hills, the wide desert, the long slope of the Nile, that gave to the river its precious freightage; the deep ditch of the Jordan, the Desert of Sin, the unsailed sea, the wedge shaped peninsula, the broad belt of mountain fortresses, the countless islands to tempt the timid hearts of the early mariners, the boot shaped peninsula, with his snow capped mountains, on which the elephants of Hannibal perished; the island fortress near enough for attack and with a breadth of water for an easy defense; Egypt, Palestine, Greece, Italy, Great Britain owe their past or present greatness to structure. The harassed and scattered tribes had not a foothold upon which they could grow, because no mountain walls or deep ditches interposed between them and their enemies.

It is safe to say that no one can understand history without a knowledge of structure.

Geography is the description of the earth *and its inhabitants.* The description of the earth's inhabitants is history. Political Geography, then, is history. History teaches how to act by showing us how others have acted, and the results.

Recollection, remembrance, and memory are founded upon the well-known laws of association. The mind must locate every object, every relation of objects, every act in space. There can be no memory of events without memory of the location upon which the events took place, either real or imagined. The more distinct the environment

of any event is, in the mind, the more easily will the event be fixed in the mind. A location becomes distinct as a mental picture in the degree that it has in itself distinct characteristic features. These features of surface depend mainly upon structure; the meeting and arrangement of slopes. We all know that events may happen, that houses or villages may be located upon any landscape whose picture is distinctly in our minds, and we have only to know the facts to fix them indelibly in our memories.

Thus, not the least value of a clear knowledge of structure is the immense help it affords to easily and permanently fix and retain facts of history. Compare the knowledge of Paper Geography, as the Germans call it, by which everything is located upon the flat, color-bedaubed pages of a map, with the developed and trained imagination that instantly pictures the structure of each continent as a whole, and from the whole can go to the parts! Read the morning papers, with the structural features of that costly desert in your mind's eye; now you are at the famous Afghan passes; in Central America, or with the French in China. How everything *looks* will add to the interest of your reading, and greatly enhance your power of retention.

Let us suppose that the general structure of all the continents is in your minds, their clothing, the vegetation, and the surface drainage that immediately depends upon the structure. These structures are known in their relations, distances and positions on the round globe.

The subject is, if you please, the vegetable products of the world. With a knowledge of climate, how easy it is to divide up the entire surface of continents into rich, fertile, arable, and barren soil; then to mark off the great forest lands; to find the best places for wheat, cotton, coffee, rice, etc. Far easier than to learn from the text, the products of a few states. Animals may be distributed, with their feeding grounds, and races located with means of sustenance clearly associated. When we mark off by an imaginary line the boundary of a political division, that part of the continent is a picture in the mind. Its general structure and drainage, its soil, climate, its animal and vegetable life, are all ready for new facts, both past and present. A political division is not an isolated map, but is a reality, with its dependence upon and relation to all the rest of the continent and the world.

Structural Geography is not only the foundation of the study of Scientific Geography, but it furnishes the best kind of a beginning for the study of all the natural sciences. The surface structure depends upon the inner structure, geology; one step more leads us to minerals and metals. The distribution of soils, the drainage, the rainfall, and the winds open the science of force, physics. The changes in soils, the elements of earth, air, and water present chemistry; the vegetation, botany; animals, zoölogy; man, history—and we might go on to the end of the chapter.

True, every subject can be made a central point for all other subjects. There must be one subject, which is the best natural center for all others, and structural geography seems to be that center.

In the next article I shall discuss the questions: Why should we begin with the continent? How should we begin with the continent?

STAGES IN NUMBER WORK.

THOMAS M. BALLIET, NORMAL PARK, ILLINOIS.

In learning number the mind of the child passes through three stages. In the first stage it cannot think of number except as it thinks of objects present to the senses representing the number. Hence there is an absolute necessity for the use of objects in giving him his first ideas of number. It is not left to the choice of the teacher as to whether he will use objects or not at this period of the child's life. Nature has forever determined that. It is only for him to recognize the fact and to be guided by it in his teaching. Objects, however, at this stage, must not be used merely to illustrate the meaning of figures, as is done in very many primary schools to-day, with a view of having children afterwards perform the processes of addition, subtraction, multiplication and division with figures; but they must be used to teach these processes themselves, and to train the child in performing them with rapidity and readiness, and applying them to practical problems. The exclusive use of the abacus, or "numeral frame," for this purpose has an unhappy effect on the child's thinking in two respects.

In the first place, by using only one kind of objects, as the beads or balls of the abacus, the child's mind becomes limited to these objects in its concepts of numbers. Whenever it tries to think of the number *five*, for instance, it thinks of five beads, and accordingly fails to recognize number readily in the case of other objects. Primary teachers, with no special professional training, often are at a loss to know how they can

teach arithmetic correctly without a "numeral frame." Ludicrous as this appears, the number of such teachers is larger than courtesy would allow us to admit; and for their sake we may here make the otherwise needless suggestion that they had better not use the abacus at all until they have learned to teach with objects without it, or else its convenience may lead them to abuse it. By limiting the child's mind to one kind of objects its thinking becomes fettered and its growth hampered. The purpose of using objects is to set the mind free ultimately from the necessity of using them and enabling it to think without them. To accomplish this it is necessary to use a great variety of them.

The second disadvantage in using mainly, or exclusively, the "numeral frame," is the fact that the children cannot handle the objects themselves. They take a far deeper interest in the work, and consequently do better thinking and pay closer attention, when they can handle the objects, than when they only see the teacher handle them. It has the same effect on them in the way of lessening their interest in the lesson that it would have on pupils in a recitation in chemistry if the teacher were to manipulate the apparatus and make all the experiments himself, instead of having them make them. Children are generally attentive and interested in any work in which they can use their hands to assist their minds. Some teachers might double their power in teaching by recognizing this fact. The attention of children who have been made habitually listless by bad teaching, can generally be regained, and often a deep interest be aroused in them, by simply allowing them to work with objects whenever this is possible.

In selecting objects for number work, the teacher must, however, not make the mistake of supposing that the interest of the lesson depends on the attractiveness of the objects. If these are of more interest to the pupils than the number work which they are to illustrate, their use defeats its own end by drawing the attention away from the thought of number to the objects themselves.

Children cannot think of numbers unless they think of things. This, however, does not imply that they must always use objects, handle and see them. After they have used them for some time they are able to think of them in their absence, by picturing them in the imagination, and the work is just as really concrete as it would be were they to handle the objects. Just as soon as they can thus think of the numbers of things in the imagination, they have reached the second stage of their work, and the further use of objects weakens instead of strengthens the mind.

It must, however, not be imagined that there is any sort of sudden transition from one of these stages to the other, the time of which is to be determined by the age of the pupil, or in any other external or mechanical way. The child's growth is continuous, and these stages merge into one another, so that the transition is not of such a character that objects must be used until a certain time, and after that their use discontinued. The withdrawing of the objects must be gradual, and the proper time for it must be determined by the child's ability to picture them in the imagination without their presence.

Any skillful teacher can test a child's ability to do this with a great deal of accuracy and certainty. Such problems as the following may perhaps serve as a helpful suggestion to inexperienced teachers: "If five chickens sit on the fence, and one-half of them jump down, how many remain on the fence?" If the pupil answers "two and a half," it is quite conclusive proof that he does not see any chickens in his mind. "If three boys can walk twelve miles in four hours, how far can six boys walk in the same time, starting together and walking in same direction?" If the answer is "twenty-four miles," the teacher may safely assume that they have failed to see in their imagination the conditions of the problem. If a child says, "there are three halves in one," "two and three are six" or "five times two are nine,"—mistakes of common occurrence in the average school,—it is a sure indication that he is not thinking of things (*i.e.*, of number) at all, but merely of words or of figures.

It is a great mistake, and a very common one, to assume that as soon as the actual use of objects is to be discontinued, children are ready to deal with the abstract. The only "concrete work" some teachers think of is work with actual objects, failing to recognize that the pupil can think in the concrete, can think of objects, without their presence. There is wide room for the use of the imagination (using the word in its popular sense) in number work, which forms a very important intermediate step between the work with actual objects and that with abstract numbers. To speak of arithmetic as a means of cultivating the imagination, and thus indirectly as a valuable element in moral training, may possibly provoke a smile on the part of those who are in the habit of looking upon it as a science that is abstract, in such sense that it must necessarily be studied under this form. Yet we believe that the moral value

of concrete thinking in number work will be recognized in the degree in which we shall supplement our knowledge of arithmetic by a more thorough knowledge of the child.

In this second stage of the work it should be the aim of the teacher to train the pupil in rapid, ready thinking, so that he may be able to see relations of numbers quickly and accurately. Figures should not be used by the pupil in solving problems, but may be used by the teacher in stating problems in writing on the blackboard. The pupil's thinking must be done concretely, and he should frequently be required to illustrate his reasoning by drawing, or rapidly sketching, the objects. As a psychological process, this is different, as the thoughtful teacher will see, from solving the problems by handling objects, requiring, as it does, more thought power.

This work should be continued until the child can with rapidity perform concretely in his mind any of the processes of addition, subtraction, multiplication and division, with all the numbers he has learned, and find the fractional parts of them. Indeed the ability to perform these operations is implied in his knowing the numbers. The principle that numbers, and not so-called "processes," should be made the unit in number work, is now so generally accepted, in one form or another, by thoughtful educators that it would seem to need here no special defense in the way of argument.

When the child has acquired great readiness in concrete thinking, when he can quickly see relations of numbers represented by the thought of objects in his imagination, then he has reached the third stage of the work, and is prepared to think by means of figures or symbols, which serve to recall into consciousness the truths previously learned by concrete thinking, so as to enable him to use them in reasoning and apply them to conditions of arithmetical problems, without the cumbrous necessity of thinking of things.

The teacher should constantly bear in mind the distinction between numbers and figures. Figures are but the arbitrary symbols that represent numbers. They belong to the language of arithmetic and should be taught as such. Teaching the use and meaning of figures, is essentially, giving a *language lesson*, and not a lesson in number at all. To teach this language before the child has learned numbers with objects, is to fill his mind with meaningless rubbish, the moral effect of which is to destroy in him that innate love of knowledge which is as natural as the appetite for food, to alienate him from school and to disgust him with study and books; but to teach him this language for the purpose of teaching him his first ideas of numbers, and to assume that by studying the figures he learns the numbers, is a sin against the child's soul that can be forgiven in teachers only because "they know not what they do."

The following suggestions, entirely familiar to experienced and thoughtful teachers, may perhaps be of help to those of less experience:

1. Begin number work with children by using objects. Do not teach them simply to recognize the number as a whole—the objects in a group—but also to see the processes of addition, subtraction, multiplication and division that can be performed with the numbers that "make" or "compose" the number, using as great a variety of objects as you may have at command, and letting the children *handle* them as far as possible.

2. Teach in this way the numbers from 1 to 10 for the first year's work.

3. Discontinue the use of objects just as soon as the children can think of the objects without having them before them.

4. After they are thoroughly familiar with numbers, and have acquired considerable readiness in performing "operations" concretely without the presence of the objects, teach figures and signs, and make use of them at first simply in giving problems on the board to the pupils to be solved by them concretely. To make the transition from this to the use of figures by pupils in the solution of problems, let them solve problems for a while with objects, and afterwards express the processes and results in the language of figures.

5. Figures should not be used as a rule by the pupils in solving problems until near the close of the first year.

6. The teacher must never forget that, whatever stages we may mark out in the child's mental growth for purposes of discussion and study, this growth is nevertheless a continuous one, without sudden transitions, and our teaching must adapt itself to it, passing gradually from one stage to another.

A NUMBER LESSON.

MARY A. SPEAR.

The class arrange themselves around a table, the teacher being seated at one end of it. On the table are a great many splints of various colors, and some colored paper squares and triangles. The children are working in the number four.

Teacher—Eva may take as many blue splints as

there are legs to this table; the other children must see if she knows what to do. (Eva and some of the others look at the legs of the table; she then takes four blue splints, holding them so that all may see.)

Teacher—Is Eva correct, George?

George—Yes'm.

Teacher—How many has she, May?

May—Four.

Teacher—What is this, Frank (touching one of the yellow squares)?

Frank—A square.

Teacher—You may take as many splints as there are sides to this square, and they must be of the same color as the square. (Frank takes four.)

Teacher—Willie, tell what Frank did.

Willie—He took four yellow splints.

Teacher—What is this, Arthur, and what is its color (holding a red triangle)?

Arthur—A red triangle.

Teacher—Find some splints of this color, and take as many as there are sides to the triangle. Bertie, tell what Arthur has.

Bertie—He has three red splints.

Teacher—Henry may give Arthur enough more to make four. (Henry gives one.)

Teacher—May and Annie take four splints of a color which you like. (Each one takes four green splints.)

Teacher—Willie, close your eyes, for you are to take as many splints as you hear raps on the table. (Teacher raps twice—a pause—then twice again.)

Teacher—Open your eyes and take as many purple sticks as you heard raps. How many have you?

Willie—Four.

Teacher—I'll give you something, Henry. What is it?

Henry—Two sticks.

Teacher—What color?

Henry—Brown.

Teacher—How many more do you need to make four?

Henry—Two more.

Teacher—Take them.

Teacher—Bertie may take one, and Nellie may take two, of any color you like. (Bertie takes one red, and Nellie takes two yellow splints.)

Teacher—Bertie, give Nellie enough yellow ones to make four, and Nellie, give Bertie enough red ones to make four.

Teacher—How many splints have we (taking four brown sticks from the middle of the table)?

Class—Four.

Teacher—We will place them on the table in front of us; and you may do with yours what I do with mine (placing them in a row, then taking one away, the children imitating).

Teacher—Willie, tell me what you have done.

Willie—I had four splints and I took one off, then I had three.

Teacher—All see how many are on the table. Now do this (putting the one with the three).

Teacher—Nellie tell what you did.

Nellie—I put one with three and made four.

Teacher—Look (taking away two)! Arthur, tell.

Arthur—I had four splints, took two away and had two left.

Teacher—All show me the two you took away. Hold it high above your heads. Show me the two you had left. You may hold that high in the other hand. Put both hands on the table, holding the splints. Bertie may tell me how many twos he is holding in his right hand.

Bertie—One two.

Teacher—How many in your left hand?

Bertie—One two.

Teacher—Each one put his two hands together so as to have the sticks come together, and see how many sticks he has. Annie, tell me.

Annie—I have four sticks.

Teacher—Yes; how did you get the four?

Annie—Two and two together made four.

Teacher—Can some one tell me how many twos you had to make four? Eva may tell.

Eva—Two twos made four.

Teacher—Now we have them all together again and we will put so many under the table (taking three). Frank tell what he did.

Frank—I had four splints and put three under the table, and had one left.

Teacher—How many on the table now, May?

May—One.

Teacher—Put so many with it (showing the three and placing them with the one). Tell me about it.

May—One and three are four.

Teacher—Place the four sticks in a row. Henry may give me two; give me another two; give me another two.

Henry—I haven't any more; you have them all.

Teacher—How many twos did you give me?

Henry—Two twos.

Teacher—How many sticks did you have?

Henry—Four.

Teacher—You gave me how many twos?

Henry—Two twos.

Teacher—Tell me how many twos you found in four.

Henry—I found two twos in four.

Teacher—Everybody may put one two in the middle of the table. Put another two there. Have you any more? How many twos in four?

Class—Two twos.

Teacher—Nellie, here is a story for you. An old cat had four little kitties; three of them were drowned, and then she had how many left?

Nellie—One kitty.

Teacher—Willie, how many wheels on a bicycle?

Willie—Two.

Teacher—How many on two bicycles?

Willie—Four.

Teacher—Eva, if I have one red rose and three white ones, I shall have——

Eva—Four roses.

Teacher—A kitten has two bright eyes, how many eyes have two kittens, May?

May—Four eyes.

Teacher—Oranges are two cents apiece and I have four cents. How many oranges can I buy, Henry?

Henry—Two oranges.

Teacher—A boy gave two cents for an orange, one cent for a pencil and one cent for some candy, how many cents did he spend, Bertie?

Bertie—Four cents.

Teacher—How many horns have two cows, George?

George—Four horns.

Teacher—Harry has four nice red apples and he gives his sister one-half of them; how many does he give to his sister, Frank?

Frank—He gives her two.

Teacher—Bertie had a pair of red mittens, and his grandma gave him a pair of blue ones, how many mittens did he have then, Arthur?

Arthur—Four mittens.

Teacher—If he should lose one, how many would he have, Annie?

Annie—Three mittens.

Teacher—Once there were four froggies sitting on a log by a pond; three of them jumped into the water to swim, how many were left on the log?

Class—One frog.

Arthur—I guess he was afraid to jump.

Teacher—Make me a picture on your slates of the one frog that remained on the log, and the three froggies that went into the water to swim. Good-bye.

The children take their seats and at once begin the drawing that shall show the teacher how well they understand the last problem.

IS NUMBER ABSTRACT?

LEWIS J. BLOCK.

I wrote the above question with a singular feeling of its inappropriateness. How could anyone think number to be anything else? What abstraction appears thinner or more ghost-like? Does any one really believe that number is only concrete? What is meant when a person says that he cannot conceive of an abstract number?

The answer to the last question appears to me simple enough. Such a person has never given sufficient attention to mental processes to render his statements valuable. Mental science belongs to the experts quite as much as chemistry or astronomy. To be sure, we all have minds and know what is going on there; that is, perhaps, not too large a supposition to make; but there is a great difference between the ordinary recognition of what we have in our thoughts, and the careful analysis of mental processes. The latter is the business of the scientist, and the common consciousness must be silent before the dicta of the scholar and investigator. I have not the least doubt that many a person, affirming that he cannot conceive of an abstract number, does not well know what kind of mental process he is to include under that term.

Again, we are the victims to a greater or less extent of false associations of ideas, which, having been introduced into our minds at an early period of our lives, persist in confusing our thinking, in spite of all our efforts to rid ourselves of them. I knew a man who associated a color with every day of the week. To him Sunday was always yellow; Monday the customary blue, and so on. Are we, therefore, to conclude that Monday is not an abstraction set up by mankind for certain definite purposes? Because somebody invariably sees the figure 2 in gold on a green ground, when the word two is spoken, are we, therefore, to decide that 2 is not an abstraction, but a concrete entity?

Number is abstract because of its general applicability; all things can be numbered; it is a category so general that it may be predicated of almost everything. But the more concrete anything is, in the ordinary acceptation of that term,

the more determined and individualized it is. It is far removed from so glittering a generality as number. A house is a definite individualized somewhat; it exists as a concrete reality, and possesses attributes which give it a specific being different from that of other houses, no matter how nearly like it. You cannot say of everything that it is a house; but you can number everything. An attribute so generally applicable must of necessity be very abstract; if it were itself a concrete congeries of attributes, it could not be predicated of so many things without producing ludicrous contradictions.

One difficulty arises from the simplicity of the subject. When we say ten, we mean only a certain aggregation of units, so much and nothing more. We puzzle ourselves in the effort to see more in the number than is simply and merely contained in it, and are forced to give it an application, as ten sticks, and then exclaim that number is only concrete. The error lies in not knowing when our concept of number is complete, and so obtruding into the concept what does not properly belong to it. So abstract is number that on that very account we find it difficult to think it.

There is an error in teaching to be very carefully avoided, and that is the continuing of elementary methods after they are no longer needed. The help we required in learning to walk is ridiculous after we are accomplished runners of the course. There appears to me danger of this error in teaching number in its more advanced aspects, and the root of this error appears to be in the strange notion that number is only concrete.

When we talk of various processes in numbers, they appear to us very empty, and we seem to be merely using words; but in fact the problem itself is so abstract that nothing more is to be said about it. Two thirds of fifteen are ten, and the result is obtained by dividing by three and multiplying by two. That is all there is in it, and that is all that any mind, acquainted with the problem and capable of solving it, does with it. As an elementary procedure, to divide fifteen sticks into three groups of five each, and then to show that two of these groups are ten sticks in the aggregate, is an admirable device in the teacher's art. But here, just what has been done is to divide by three and multiply by two. When the whole procedure is clear, the sticks are rather in the way than otherwise, and, if anyone infallibly knows that two thirds of fifteen are ten, he need not be much alarmed, if he, when called on, is not at once capable of dividing a given number of objects into fractional groups. To insist on the latter is to enforce elementary methods when they are past their usefulness. The sooner a pupil succeeds in the abstract performance of the operations of abstract number, the better will it be for him. Think of a business man working his problems in interest on a numeral frame, or an accountant using his fingers when his head gives out.

This little paper was in part suggested by two articles in THE PRACTICAL TEACHER on Development in Fractions. I hesitate to differ from their author, for whose practical acquaintance with educational problems I have the highest esteem, but I cannot help thinking that there lies an error in his conception of number which interferes with the correctness of his conclusions. There are one or two other points in his articles about which I should like to say something, but this paper is already long enough.

[Free, logical discussion is not only invited, but earnestly requested from all those thinking deeply upon vital questions in the science of teaching. I shall discuss a few points of difference with Prof. Block's paper in the next issue of this paper.—ED.]

FROM SCRIPT TO PRINT.

BELLE THOMAS.

PURPOSE OF LESSON—to make the change from script to print.

Monroe's Chart, first two pages.

A group of eight or ten little folks gather about the teacher. A promise which she had made to them the night before—that if they were all there bright and early the next morning she might show them something from her large picture book (the chart)—made them, if possible, a little more eager than usual.

"Under that cover I have the picture of——" writing "a man" upon the board. Their upraised hands and eager manner plainly show that they know this word.

"Let us see if we can find one here," turning back the cover of the chart and disclosing the picture of a man.

With a quick glance they see the picture, and one exclaims, "Here is the word man," placing his finger upon the printed word directly under the picture.

"Why so it is. Alice, can you find another word like that?" Alice finds one; several others do so as they are asked, until this word is found in some half dozen different places on the chart.

"I have another picture here," the teacher remarks as she turns another leaf. A small boy

with a large hat on his head and a cane in hand, is the subject of this picture.

The children's delight is shown upon their faces, some laugh aloud, while Frank remarks, "That boy thinks he is a man."

"What makes you think so?" asks the teacher.

"Because he has on that big hat," replies Frank. Grace thinks the man in the other picture has no hat on because the little boy has taken it.

"Do you ever play you are men?" addressing the boys of the class.

Two of the boys give their experience in that direction.

"Let me see if I have a man in this class." At this they stand as straight and tall as possible.

"Albert, what do you want to tell me?"

"See; I'm a big man," answered the boy.

"So you are. Paul, what are you?"

"I am a little man," is the answer.

"Let me write what I think Roy is going to say," writes, "I am a man."

"Roy may read my story." He reads it.

Each boy in turn is called upon to read the same sentence.

"Here is a story for Grace," writes, "I am a girl." Maggie reads.

"Paul, would you like a story?" writes, "I am a boy." Paul reads.

"Roy may find the story I wrote for Grace, and read it." He does so without hesitating.

"Albert may read Roy's."

Turning to the chart again, she asks, "Who will find this for me!" (pointing to the word am on the board.)

Several bright eyes have spied the word, and show by their hands how eager they are to point to it. Lucy has permission, and shows us the printed word am as readily as though she had always used that form. Her success leads the timid ones to try again, and once more they look to see if there is another word like this on the page. The teacher succeeds in leading them to find it wherever it occurs on the page.

"Who will tell me what this boy says to us?" (pointing to the sentence under the picture.) Frank reads it with the same readiness which was seen in reading from the board. Pointing to the second sentence, "Ellen, I think he is talking to you, in this story." Ellen reads.

"Each one may choose his own word or story, and tell me what it is."

A few turn to the board and make their selection from the script lesson, but the majority of the class make their choice from the printed words. At the close of this review she dismisses the class with, "Go to your seats and draw me a picture of the hat and cane which the man could not find."

In reply to this question, asked by a visitor, "Why did you use 'I am' so often in your blackboard lesson?" the teacher said: "It is a new idiom to those children, and I wanted to feel sure that they knew it in script before showing it to them in print."

There was not one word said to these little folks about any change. In a matter-of-fact way the teacher made it a simple step to take, the children followed as though no new element had been introduced.

These children have now had ten lessons from the chart, and though they are now meeting words which, in the printed form, are quite unlike their written form, still they seem to recognize these as readily as those which are very nearly alike both in script and print. This is due largely to the skill of the teacher in mingling the two forms in every lesson—she leaves no wide gap between.

Each day, before taking up the new lesson, she makes a rapid review of all the lessons they have already read from the chart; in this way giving to them gradually the ability to read the print without the immediate aid of script.

LANGUAGE TEACHING.

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III.

In order to secure facility as well as correctness in the use of language on the part of the pupils, it is necessary that the teacher should make nearly all of her school exercises contribute to this end.

The subject of language, like that of morals, should be presented to the children in an attractive form, and at times, when the circumstances are most favorable for impressing their young minds. Stated and formal lessons upon either subject do but little good to the ordinary child. Connect them, however, with other subjects in which all children are interested, and the best results will follow.

Not one child in a thousand cares whether he uses language grammatically correct or not. But all children like to listen to stories and like to look at pictures. Give them, then, the stories and the pictures—and by natural methods encourage them to tell what they have seen or heard. The stories and pictures give them ideas, while

the effort to tell what they see or hear, gives them facility in the use of language.

Now carry this idea one step farther. You wish to instruct the child concerning the animals and plants with which he thinks himself familiar. He must know of roots, and stalks, and leaves, of flowers and of fruits. He must know the most prominent characteristics of animals, the peculiarities of their coats, feet, eyes, teeth, etc. His attention must be called to the construction and uses of things about him; of the bell, the globe, the blackboard, his slate, etc. All these and many other similar lessons are given to the pupil in every well-regulated school, to stir his mind, to teach him to investigate, and to make him more intelligent.

Such lessons as these, however, should be made to contribute to the child's ability to use language correctly. How shall this be done? Suppose the cat is the subject under consideration. Ask the children to examine, at home, the cat's hair, and to tell you on the morrow all that they have learned about it. When the morrow comes nearly all will have something to tell. The teacher stands at the board, chalk in hand, and notes the information gained. One has discovered that the hair is short, another that it is soft, another that it grows from the head toward the tail, another that it is much longer on some parts of the body than on others, etc. Each pupil is interested in the results of his own investigation, and makes his statements with the utmost freedom.

In the same way, in succeeding lessons, the pupils examine the eyes, teeth, and feet of the cat, bringing to the class the results of the examination for the teacher to note upon the board as indicated above.

When the investigations of this animal have been completed, the teacher should arrange the notes of all the lessons methodically upon the board, and require the pupils, guided only by the notes, to tell all that they have learned. If the teacher is careful to require them to make complete statements, and as soon as possible will require them to make a *series* of statements, she will find the exercise to be a valuable language lesson.

I hardly need add that these language exercises should also be written. The teacher must not think that all this work should be done in one lesson. Lessons, especially for young children, should be very short. In one lesson the pupils may be allowed to state the results of their investigations while the teacher makes the notes upon the board. In the next lesson the pupils make a more complete story of what they have learned. If their success is fair, the third lesson may be given entirely to writing. In this exercise the pupils are required to tell with their pencils just what they would tell with their tongues if you had time to hear them.

While the pupils are writing, the teacher should take *silent* note of any errors that may be made, and at some future time, should call the attention of the class to such as are worthy of notice.

It should be remembered, however, that the pupils will *outgrow* a large part of the errors that are made in their first efforts at composition, and it is useless to spend the time of the class in considering them.

Keep the children talking and writing; correct such mistakes, *with the pupils*, as they will not be likely to correct themselves, and trust to the future for that perfection toward which every true teacher strives.

LETTERS FROM GERMANY.

STOY'S SEMINARY FOR TEACHERS, JENA.

L. SEELEY, JR.

I.

Every teacher in Germany must either take a university course or a course in a teachers' seminary before he can teach. Usually those who take the former course become teachers in *Gymnasien* or *Realschulen*, which correspond somewhat to American high-schools or fitting schools. In order to enter the university they must have completed the course in a *Gymnasium*, or in a first-class *Realschule*. The university course requires at least three years, the student selecting what he will study. If he wishes to teach physics he makes that his chief subject; if history, or mathematics, or literature, or ancient languages, or modern languages, whatever he will, he bends his energies in the university to that end. While he may hear lectures on the history or science of pedagogics, he has no practice in teaching or experimental work with children. He enters his work as teacher with broad culture, but with no teaching acquirement, save what he has obtained by contact with and instruction from teachers who have driven the roots deep, who always go to the foundation of things, and who have become skilled in excellent methods in teaching.

But the other class, those who take the seminary course, have quite different aims and reach

quite different ends. They may enter at fifteen or eighteen, must have a good knowledge of grammar, history, arithmetic, geography, simple geometrical figures, and some knowledge of music.

The first year is devoted to theoretical work, but in the second and third years he has practice with children under the supervision of competent, experienced teachers, at the same time receiving instruction in the theory of teaching, and for his general culture. After completing this course, he is appointed assistant in the common schools at a small salary. This position he holds for two years, when he passes another examination and receives a fixed place. Teachers from these seminaries seldom get places in the high schools, except for especial merit, and then in the lower classes.

One often finds better methods of instruction and more earnest seeking for truth in the common schools than in the *Gymnasien,* because the teachers of the former have been trained definitely for teaching, while the latter have been given the matter without attention being called to the method.

But there is one teachers' seminary in Germany, and only one, that seeks to unite the broad culture of the university with the study and practice of the best, truest and most psychological methods of instruction. That institution is Stoy's Seminary, in Jena. This seminary has two classes of members, the ordinary and the extraordinary. The ordinary members consist of those who teach regularly in the school, and those who teach a given number of hours per week under supervision, for the sake of practice and criticism. The extraordinary members are those who attend all the meetings, visit the school when they please and study the methods by observation, though they may engage in the debates when they please. These consist mostly of foreigners, and Greece, Armenia, Bulgaria, Bavaria, America and other lands are at present represented.

Special lessons are given once a week for study, for criticism and as models, in the presence of the whole seminary. The *practicant* (the one who gives the lesson) has ample notice, must make a written preparation, and is expected to consider the work with greatest care. Thirty minutes are given to a lesson. It is not a review of what the pupils know, a "showing them off," but is supposed to illustrate daily class work,—just what the teacher would do were he alone with his class in his class-room. The usual course pursued is: (1) Review sufficiently to make the connection of previous lessons with this; (2) Give instruction in the next step of the subject, *the teacher teaching;* (3) Question the pupils repeatedly and in a variety of ways concerning what has just been taught, thus fixing the lesson. The Germans believe in reviewing, in repeating until the ideas are firmly impressed, until the subject-matter is fixed.

A few days later a meeting is held in which the *practicant* first reads a careful self-criticism in which he specifies what task had been assigned him, what objects he had in his treatment of it; how he had succeeded, and wherein he failed. He is immediately followed by an appointed critic, also with a written criticism. He also states what was attempted, wherein success was attained and wherein he failed. These criticisms usually take from six to ten pages of foolscap. The number of questions asked, per cent correctly answered, per cent of pupils questioned, per cent not called upon, number asked one question, two, three, etc., attention of the class, tone of the teacher, his manner, his style of questioning, his treatment of the subject, in short, a keen, sharp, searching criticism of the work are points noted.

The *practicant* then has the right to defend himself, or to acknowledge his wrong. It may be well to say here that while the work of the *practicant* is so keenly and unmercifully criticised, no one thinks of it as aimed at the individual. It becomes simply an earnest discussion of the question, "What is truth?" and the work in hand is made the basis of thought for the discovery of truth and error. The subject now becomes the property of the meeting, and is discussed pro and con in all its bearings. Each member has made careful notes which he uses as he pleases. These sessions embrace a discussion of two lessons, and usually last from three to four hours. No one becomes tired, the matter is discussed with the perfect phlegmatic coolness and want of haste of the German. Perhaps the mug of beer which each one sips from time to time helps to while away the hours. To an American this is somewhat tiresome.

After all have finished, the director reviews the subject, shows where the truth lies, and points out the pedagogical truths underlying the whole subject. Stoy, the founder, has lately died; but it is probable that another director will be called who will continue the work in the spirit of its founder. In the meantime, his assistants, who understood him well, will continue the work. The work is so arranged that one can hear lectures on pedagogics and other subjects in the

university. In fact, the idea is to teach the science of teaching in the university, and the art in the seminary. In my judgment there is no other place in Germany which offers advantages to students of the science and art of teaching equal to the advantages of Jena.

HAND AND EYE TRAINING.

W. W. SPEER.

In 1874 the State Legislature of Iowa passed a bill recommending that the schools of that state have, not oftener than once a month, exhibits of industrial work. These exhibits were encouraged, not for the purpose of fitting pupils for special vocations, but because of the effect of the hand and eye work in giving culture to mind. The action of the Iowa Assembly is, I think, a prophecy of the future action of many of the states of the Union.

That a citizen of this republic should grow up without knowing that the Canary Islands are off the west coast of Africa, that "is" is a neuter intransitive verb, agreeing in person and number with its subject, and that Cambyses defeated the Egyptians by arming his troops with the sacred cats, would by some be considered sad; but would it not be a still greater misfortune for him to grow to manhood without knowing how to work? There is many a tramp and finely-appareled parasite who knows that "the" is a definite article, but does not know how to work and does not want to know. They were taught the former, but not the latter. Emerson seems not to have had that exalted opinion of the public-school courses of study which we, who make the courses, entertain, for he says: "We are students of words; we are shut up in schools and colleges for ten or fifteen years, and come out at last with a memory of words and do not know anything. We cannot use our hands or our eyes or our arms." There is no very striking or close connection between the ordinary school life and real life. In real life a man must make his own position, he must think and act for himself; but in schools the work is usually done by text-book or teacher. The pupils spend most of their time *reading* the history of what someone else discovered or thought. For example: In geometry, he learns and repeats the demonstrations of others—the history of geometry and not geometry at all. In physics, instead of making a few discoveries for himself, he spends his time reading what it has taken the race centuries to discover, and then prides himself on his great learning, as though the intellectual efforts and achievements of others would give vigor to and set the habit of his mind.

It may be urged that the public schools should not be burdened by the introduction of new matter. Will we add to the burden if we give a little more time to real things? If teachers entertain the thought that they must pour into the minds of their pupils as much as possible of all that the race, in its evolution, has discovered and done, they will indeed be bowed down by the weight of a great responsibility; but if, on the other hand, they regard themselves as directors and stimulators of their pupils' powers, the task is not so discouraging.

We are constantly exhorting our pupils to think, but they can't think, many of them, for they have never observed. If you wish to teach a boy linear and surface measures, furnish him lumber and tools, and set him to work to make something. He will acquire more knowledge of these measures by one day's work than by repeating tables and solving problems for six months. When he has formed habits of observing and thinking, the study of books may supplement the knowledge gained from the study of things, but to reverse this order is to place the abstract before the concrete, the unknown before the known.

As a majority of schools are, at present, organized, there is little or no opportunity to discover what the tendencies and capabilities of pupils are. I am in favor of furnishing the pupils an opportunity to do something in order to discover and foster their special powers. I would not have industrial training interfere with or supersede mental culture. On the other hand, I favor its introduction into our schools, that through the united education of brain and hand those who must earn their bread by manual labor may become something more than mere operatives. The majority now work because they must without any interest in the creation of their hands. Had they been trained by intelligent teachers to think, to plan, and to execute, they would find in their work employment for mind as well as hand, and the result would be less discontent and better work. It is idle to ignore the fact that all cannot get a living by the work of the brain alone. I would, therefore, favor a system which shall unite the work of the school with the future of the artisan as well as that of the professional man. All will not engage in manual labor, but their efforts while pupils will lead to truer ideas of the value of things, a bette

understanding and appreciation of one another's efforts, the outcome of which will be more cordial relations between different classes of workers. Give pupils credit for what they do with their hands as well as for their intellectual efforts and they will regard all toil as equally honorable, and more of them will engage in those occupations for which they are best fitted.

The following statements appear to me to furnish some reasons why manual training should receive more attention in the public schools:

1. Manual work leads to observation, which lies at the basis of all knowledge.

2. Contact with things gives us the basis of our ideas of color, number, form, weight, size, etc. Handling materials and planning work leads to a closer examination of the qualities and relations of things, and changes indistinct impressions into positive knowledge. Through these impressions and experiences the foundation is laid for future thinking.

3. Were schools to show greater respect for and give more attention to real work, the prejudice against it would give place to a sentiment in its favor.

4. The interest shown by teachers in manual work leads to a greater willingness on the part of pupils to perform home duties.

5. Hand and eye training will aid pupils to do home work more quickly and with greater skill.

6. Hand and eye training will aid the pupil in any vocation he may choose to pursue.

7. Hand and eye training will aid the pupil in the choice of an occupation, for it will show to him the kind of work for which he has the greatest capacity.

8. The healthy condition of the mental and physical powers which we seek to maintain by gymnastic and calisthenic exercises would be, in part, secured by manual work.

I will close this article by quoting from an address delivered by Superintendent M'Alister, of the Philadelphia schools. He says: "The perfectly educated man is he whose facile hand follows obediently the clear and ready promptings of a well-developed brain. The hand is the most marvelous instrument in the world; it is the necessary complement of the mind in dealing with matter in all its varied forms. It was the hand that rounded 'Peter's dome;' it was the hand that carved those statues in marble and bronze, that painted those pictures in palace and church, which we travel in distant lands to admire; it is the hand that builds the ships which sail the sea laden with the commerce of the world; it is the hand that constructs the machinery which moves the industries of this age of steam; it is the hand that enables the mind to realize in a thousand ways its highest imaginings, its profoundest reasonings, and its most practical inventions."

(To be continued.)

CORRESPONDENCE.

NORTH EAST, PA., March 4, 1885.

COL. F. W. PARKER:

Dear Sir,—On page 91 of THE PRACTICAL TEACHER for February, a teacher, writing from New Jersey, seems to convey the impression that there is essentially a difference between good reading and good talking, as acquired by children. It would appear from this that teachers' experiences do not always agree. In 1876 I notified the teachers under my charge to give "greater gravity" to reading. *Special* attention was given to the classes reading in the fourth and fifth readers. Various methods were employed to break up the "whine and groan" and the "stilted style;" but after three years of faithful effort, the results were found quite unsatisfactory. By teaching more or less in all the grades from the first primary to the high-school, my experience led me to conclude that the difficulty arose in the lowest primary grade. Accordingly the educational focus was turned upon this grade with these maxims: *Only one or two new words shall be taught at each lesson. Every new word must be taught by awakening the curious in the child. Every word must be recognized, as readily as a human face. Every word must recall to the child, the proper idea vividly. More reading matter must be given to the child, before taking a second reader, than is found in any first reader.*

We followed these and similar maxims persistently. After reading Monroe's chart, we used four or five different sets of first and second readers, and with results more gratifying than can be described. The maxim: *Pupils must never be allowed to say or read a sentence in any but a natural way*, should be at the head of every reading lesson, or better, in the head of every one who teaches reading. If this maxim be carefully observed, I know that pupils will not *read* unnaturally, any more than they will *talk* unnaturally. But after pupils have once acquired bad habits in reading, if mentally sick, it is doubtful whether a great percentage can be entirely cured. Yours for the TRUE EDUCATION. F. H. UMHOLTZ.

BOOK NOTICES.

GOOD THINGS FOR THE CHILDREN.

"HERE'S RICHNESS." The language of Squeers, but not his meaning, comes to me as I examine the beautiful books for children, just published. Two wonderful books are now within the reach of every child in our schools, "The Water Babies" and "Greek Heroes," by Charles Kingsley. These books are classics in the best and highest sense. They are a "joy forever" for children of every age, from ten to four score. Any one who can read "Water Babies" without delight must have something wrong in the upper story. To Kingsley belongs the great honor of being among the first to preach the gospel of teaching nature and the natural sciences to children. The motive of "The Water Babies" is to make its readers fall deeply in love with animal life. It can be read with great profit by all grades from the fourth up. Miss Stickney, the editor, has done her work well, as she does all work for the children. Ginn, Heath & Co., publishers.

"KINGSLEY'S GREEK HEROES" is known to every one of literary taste. It is full of delightful stories of heroic mythology. It is adapted to fifth grade up. Ginn, Heath & Co., give us an excellent copy edited by John Tetlow; McMillan & Co., another.

"BOOK OF FABLES," by Horace E. Scudder, Houghton, Mifflin & Co., is adapted to the second grade. It is an admirable book for language lessons. The stories are short and very interesting. They can be read and reproduced orally, or in writing. Try the "Book of Fables."

"CHILDHOOD," one of the little classics, Houghton, Mifflin & Co., may be read with profit and pleasure by the fifth grade and upward. It contains "A Dog of Flanders," "The King of the Golden River," "The Lady of Shalott" and other good stories.

BOOKS FOR TEACHERS.

THREE GREAT BOOKS UPON EDUCATION are Rousseau's "Emile," Pestalozzi's "Lienhardt and Gertrude," and John Paul Richter's "Levana." These three books should be in every teacher's library. It is an inspiration just to look at them, and think how much good they have done. Rousseau's "Emile" was the great *Bahnbrecher* (way breaker) in education. Rousseau's attacks upon the stiffness, rote-work and conventionalities of the schoolmasters of his time are fierce and uncompromising. Through some error and many exaggerations, shines the pure metal of truth, the truth that is now making children free. Ginn, Heath & Co., have published a translation of "The Principle Elements of Pedagogy found in the first three books of 'Emile,' with an introduction and notes, by Jules Steeg, Député, Paris, France." The translation was made by Miss Eleanor Worthington, for a long time a member of the Faculty of the Cook County Normal School. Miss Worthington has done her work admirably. It is to be hoped that the same publishers will follow this good beginning with "Lienhardt and Gertrude," and "Levana."

WILLARD SMALL, 24 Franklin street, Boston, has just published an American edition of Laurie's "Life of Comenius." Comenius, Pestalozzi and Froebel stand above all other teachers in history, as lovers of children. The secret of their greatness is to be found in their all-absorbing, self-sacrificing love for humanity. Laurie has given us an excellent description of the mild-eyed Moravian preacher and teacher, who said, "That teacher succeeds best who follows nature the closest," and "Things that should be done must be learned by doing them." "History repeats itself," and it inspires new courage to fight the battle for better teaching when one reads of Comenius' journey to Holland, and of his efforts to explain to an assembly of teachers how, in his opinion, children might be taught in a better way; and that such assumption was too much for the Dutch schoolmasters, who rose in their wrath and exclaimed, "Away with him, and his new-fangled methods."

"QUINCY METHODS," so long expected, is now out. Miss Patridge has done her work thoroughly and well. Under this name she has presented clearly the actual work of different schools in Quincy. Descriptions of methods are only useful in leading teachers to the principles and motives that underlie them. Miss Patridge's descriptions are excellent. The writer can bear witness to her long, persevering and thoughtful study of teaching. The publishers, E. L. Kellogg & Co., 25 Clinton Place, New York, find fault with the former superintendent of the Quincy schools, because he claims that he got some of the so-called "Quincy Methods" from Calkin's "Primary Object Lessons." So far as the writer knows, the work in Quincy came from Rousseau, Comenius, Froebel, Mann, Calkins and from many prominent educators, whose books the teachers of Quincy could read and understand. There was nothing distinctly original or new in the Quincy work. Its goodness or badness comes

from the principles and methods of the past, and in such a light "Quincy Methods" should be read and studied by all teachers who are seeking for the truth.

"HUMBOLDT LIBRARY OF SCIENCE," J. Fitzgerald, 20 La Fayette Place, New York. It is well to know that $9.60 will buy sixty-four most admirable books for the study of teachers. "Education," by Spencer; "Seeing and Thinking," Clifford; "Mind and Body," Bain; "Study of Words," Trench; and other well known works are among the excellent books found in this library. *Teachers* can get this set for $8.00 post paid, or single copies for 15 cents.

A VISIT TO GERMAN SCHOOLS.

(Continued from March Number.)

Notes of a professional tour to inspect some of the Kindergartens, Primary Schools, Public Girls' Schools, and Schools for Technical Instruction in Hamburg, Berlin, Dresden, Weimar, Gotha, and Eisenach, in the Autumn of 1874, with critical discussions of the general principles and practice of Kindergarten and other schemes of elementary education.

BY JOSEPH PAYNE, AUTHOR OF PAYNE'S LECTURES.

VISIT TO DRESDEN.

Dr. Marquart, also speaking from experience, had made the same remark, adding that some children, who had been pupils in his own kindergarten, created, to use his own expression, "quite a furor" in the gymnasium.

I visited an institution for training kindergarten governesses, where I found a number of young girls under the direction of Madame Keller, the principal, engaged in pasting slips of white paper on blue cardboard (*Aufkleben*), and producing various geometrical forms; and others producing similar forms by laying down little tablets on the desk before them (*Legetafelchen*). I had occasion here to remark, as I had done at Hamburg, how very small an amount of native intelligence the students were credited with. "Look here; don't you see that that is quite wrong?" "That ought to have been done so," etc., when the slightest reference to the fault would have called forth the reflection necessary for the correction of the pupil himself. I need not repeat the remark I have already made on this subject. The teacher was no doubt able and intelligent—as she certainly was amiable and kind—but I am persuaded she might make more of her materials than I saw made.

I wished to visit the Volks kindergarten attached to this institution, but it was "free" time for the children, who were all in the playground, and I could not wait. I observed, however, that they were happily engaged in playing with some large heaps of dry sand, just as children play on the seaside, scooping it out, making mounds with trenches round them, etc. This seemed to me a good hint for other kindergartens. These sand-heaps afforded an immense amount of innocent amusement, not altogether unaccompanied with instruction.

I left this pleasant scene in order to avail myself of an introduction to Dr. Kockel, the accomplished director of the Königliches Schullehrer Seminar (Normal School for Elementary Teachers), with attached practicing schools. I was most pleasantly received by him, and put in the way of visiting some of the lower classes of the school under the courteous guidance of Mr. Thieme, one of the head-teachers of the Seminar, with whose marked intelligence and artistic skill I was strongly impressed. I was the more interested in visiting these elementary classes, because Dr. Kockel is himself a strenuous advocate of Froebel's principles, and has impregnated the practicing school with them. I do not know whether there is a class of kindergarten children in this institution, but the Froebellian exercises (gymnastics, weaving, paper-folding, tablet-laying, natural drawing, as well as the cubes, spheres, etc., of the "gifts") certainly form a regular part of the method pursued in the lower classes, with a view, as stated in the prospectus, of "cultivating the children's active powers, and laying a sound foundation for drawing, geometrical instruction, and the observation of nature."* I was introduced by Mr. Thieme to the twelfth class, where I found thirty-three children, boys and girls, of from six to eight years of age; apparently, judging by their dress, and in many cases by their bare feet, of the poorest class. A young teacher was just about to give a lesson on geography, and I found it was to begin with the house itself in which the children were assembled. As it was a very interesting lesson (and, moreover, typical), and as I stayed the whole hour while it was given, I shall describe it in detail.

[*To be continued.*]

How, then, does nature teach? She furnishes knowledge by object lessons, and she trains the active powers by making them act. She makes her pupil learn to do by doing, to live by living.

JOSEPH PAYNE.

*It is to be noted that in this institution, which is a government normal school, the kindergarten certainly forms a part of the system.

A VISIT TO GERMAN SCHOOLS.

(Continued from April Number.)

Notes of a professional tour to inspect some of the Kindergartens, Primary Schools, Public Girls' Schools, and Schools for Technical Instruction in Hamburg, Berlin, Dresden, Weimar, Gotha, and Eisenach, in the Autumn of 1874, with critical discussions of the general principles and practice of Kindergarten and other schemes of elementary education.

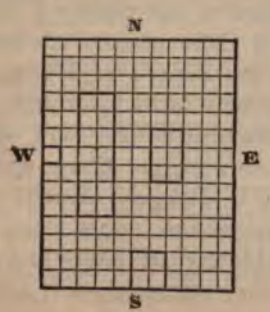
BY JOSEPH PAYNE, AUTHOR OF PAYNE'S LECTURES.

DRESDEN.

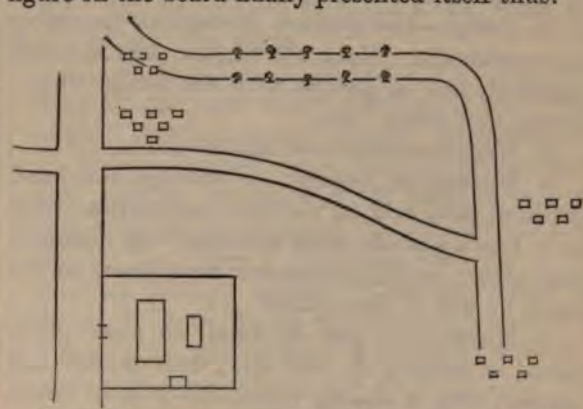
Besides the ordinary blackboard there was another painted in squares, on which, or in connection with which, the lesson was to be given. Each child had a slate correspondingly ruled in squares. The teacher began by asking questions about the bearings of the house—"Which is the north?—south?" etc. These questions were very promptly answered, and N., S., W., E. marked on the board. Then, "How is this house situated?" It came out that it faced the north, and, therefore, the sides were known. Then was shouted out simultaneously, in a very high key, "The-front-of-the-house-looks-toward-the-north." Then, "What is the house built of?" Answer—"The-house-is-built-of-stone." Then, "What was round the house?" Answer—"A garden on three sides"—shouted out in chorus, "The-sem-i-na-ry-gar-den-has-three-sides." I have not given all the questions and answers.

The teacher then began to draw, strictly preserving the proportions pointed out by the squares, the shape of the building, asking questions as he made every line, and directing the children to draw the corresponding figures on their slates. The questions were such as these: "What have you done now?" "Why is that line so long, and not longer?" a reason being required for every operation. Then the out-houses were visited, questions being asked what they were for, and how large in proportion to the main building, etc. From time to time, at a signal given, the children laid down their pencils and shouted out their answers simultaneously, as before described.

The figure on the board and on the slate was, at the present stage of the lesson, something like this:



The position of the house and its surroundings being thus determined, and many questions being asked upon it, the teacher took his chalk in hand and proceeded to draw the street on which it stands, asking many questions, such as, "In what direction does the street go?" "The street" (not merely "it") "goes E. and W." "To what place does it go?" "The street goes east to Löbtau." "What places or buildings does it pass near on the way to Löbtau?" Then, naming other places in the neighborhood, "How must we go to reach ——?" "We must still go E. to reach ——"; or, sometimes, "N.E., or N.W.," etc. Löbtau and some other places were then inserted by the teacher on the board, and by the children on their slates. Then all left off, and a boy was called from the class to the board to examine (pointer in hand) the rest on what had been done, which he accomplished very skillfully, repeating his question over and over again. (One child who was rather inattentive—a marked exception—was punished by the teacher's taking his pencil from him.) Then other streets or roads were inserted with the same strict observance of the bearings, and the figure on the board finally presented itself thus:



I could not but consider this a very excellent lesson—excellent in every way. The children (with the exception already mentioned) were earnestly attentive throughout; their own co-operation all the time maintained the interest excited by the teacher, who, on his part, though young and a novice in teaching, steadily kept to his purpose. This first lesson was to be followed up by others, extending the area to the principal towns of Saxony, and then the map of Saxony was to be carefully studied and mastered. The teacher, of course, had no book to aid him. I never saw a teacher with a book in any German school, even when reading in class was going on. In this case the scholars were to read so as to inform the teacher of the matter of the lesson.

If they could not do that, then the reading was bad, and had to be recommenced. Everywhere the teacher appeared to be master of his subject.

I next went with Mr. Thieme to a class of children of between six and eight years of age, in which he himself gave a lesson in writing. Three other teachers were present, who merely looked on and acted under direction. All the children but the very youngest, who wrote on ruled slates, had copy-books. This lesson was, in many respects, very remarkable. I had never seen anything like it before.* The part which particularly attracted my attention was the elaborate preliminary exercise—the pantomimic representation of all that was being done by the pupils.

The object was twofold—first, to prepare the fingers and the mind for their work; and, secondly, to make the pupils conscious of all the operations they were to perform in the practice of writing.

1. Exercises with the fingers. Mr. Thieme held up his hand with the fingers close together; he detached one, two, three from the rest; then, renewing the operation, he added them singly or in groups to each other; he elevated them singly or in groups—the children throughout imitating his movements. Next, the fingers were elevated separately and in groups, with the words, "up—down—up—down," etc.

2. Wrist-movements of various kinds.

3. Movements required in writing; the hand (without pen) held in the required position; then both hands and the arms arranged with regard to each other; lastly, pantomimic movements on the board by way of illustration.

4. Movements, pen in hand, to show proficiency in holding it; first slow, then quicker and quicker, then a sliding movement of both hands to show that the letter was made.

These exercises altogether occupied nearly a quarter of an hour. The teacher then took up the chalk and wrote on the board (ruled for round hand) various strokes, the children making the same in their books. Then followed a line of *f*s, each being joined to the preceding by a curved line thus—*f*~*f*~*f*~*f*~*f*; while each movement of the head was accompanied by the words, "one—two—three," "one—two—three," so that the whole class (each child repeating softly the same words) made the same stroke at the same time. Then the pace was quickened, and they proceeded at a rapid rate. In fact, the pace was far too rapid, and prevented the children from observing the model, which I observed they did not look at a second time. The strokes were all made with very sharp-pointed pens, so that the distinction between thick and thin strokes seemed scarcely even to be aimed at. With some modifications, easily made, this method appeared to me very excellent. The preliminary exercises especially, though too much prolonged, would certainly make the hand flexible, and give every child a very distinct notion of what he had to do.

On the whole, I was much interested by what I saw in this practicing school. I only regretted that I had no time to give to a visit to the classes of the Seminar itself—an institution, judging from the programme of studies, and from what I saw of the teachers and the teaching, in which such work is well done.

I felt on leaving Dresden that I had done scant justice to the earnest educational activity which prevails there. My plan, however, did not allow of further delay. I proceeded, therefore, next, to Weimar, which I reached on the 8th of September.

WEIMAR.

In Weimar I first visited the Bürgerschule (Director Pfeiffer), a large institution for boys and girls, each in a separate part of the school house. My special purpose was to attend the lessons of the lowest class, consisting, as I found, of about eighty little girls of six and seven years of age—far too great a number to be under the direction of one teacher, though in this case the teacher was a very intelligent young man. The children were, however, ably managed, and were very attentive and orderly; yet as was natural under the circumstances, the greater part of the work was done by a comparatively small number of the children.

The business of the morning began at eight o'clock with a short prayer, all standing. The lesson was on the history of Moses, a portion of which the teacher related in a simple manner. He then asked a number of questions, which the children answered readily. They appeared to be much interested. The good answers were repeated simultaneously by the whole class, some of the little boys nodding their heads and swaying their bodies while they answered, as if naturally moved

* It appears, however, from Strach's interesting *Geschichte des Deutschen Schulwesens*, that this method is in substance Dafft's, who made it known twenty-five years ago. He prescribes preliminary exercises for rendering the fingers supple, exhibition of the proper way of holding the pen, and especially the writing by time (*Taktschreibung*), the teacher leading the operation by saying "one" at the up stroke, and "two" at the down stroke, which words the learners are to repeat softly as they make each movement.

by the interest of the story. This little trait struck me forcibly. Now and then they were required to repeat after the teacher some little rhymes. At another time the teacher said, "When we feel ourselves fresh and well in the morning, what ought we to do?" "We ought to pray, and give thanks to the dear God." On the whole, this was an interesting little lesson.

The teacher next began a lesson in reading, having by his side a blackboard with ledges, on which he placed movable blocks, each containing a letter. These were sounded at first separately, then in various combinations, by the "laut" or "sound" method,* the children framing the mouth for each sound, consonants and vowels, and then, in the case of the hard consonants, exploding the sound. It was the sound of the letter, not its name, that was uttered—"P-a, pa; p-a-pa; papa;" *w-ä-n-d-e, wande.* "*Wie viele Wände hat die Stube?*" (How many walls has the room?) Answer, "*Die Stu-be hat vier Wände.*" (The room has four walls); and so on.

Then followed arithmetic. The teacher produced a tray of cubes, and taking up one, said: "*Was ist das?*" (What is that?) "*Das ist ein Würfel.*" (That is a cube.) "Count the sides—the edges—the angles. How many are there?" The children answered promptly and well. Three or four more cubes were produced, and placed on or alongside each other. "How many are there now? I take away one—two—three; how many are left?" "How many when I add these" (pointing at four) "to this one?" Answer, "Four cubes and one cube are *five* cubes" (strong emphasis on *five*). Then a number of such questions as these were asked: "You buy twopence worth of apples and four pennyworth of potatoes—how much do you spend?" All these questions, certainly simple enough, were answered perfectly; not only correctly, but with a certain air of mastery, denoting complete comprehension. Then came writing. The copy "*Mutter*" was written on the board, and read aloud before it was written. The children wrote on slates, one side of which was ruled for large hand, the other was ruled in squares for *Netzzeichnen.* Some of the writing was remarkably good for such little children; and indeed, on the whole, considering the number in the large class, there was a good deal of intellectual life. Many of these children came, no doubt, out of the two large kindergartens of Weimar; and whether they did or not, the spirit of the method pursued was as nearly as possible in conformity with Froebel's principles.

I visited in the same institution the lowest class of boys (?8—of six and seven years of age). Here there was more amusement, less teaching. All sorts of exercises, as clapping hands together, the one on the other, laying the head first on one hand, then on the other, then on both, going to sleep with the right side of the head laid flat on the cloth, then the same with the other side, etc. They then sang to the teacher's violin accompaniment a song, the refrain of which was "Cuck-oo, cuck-oo." The singing was loud, not sweet. I did not stay for the next lesson.

I have here and in other parts of this book minutely described what I saw done in the *Volksschulen,* because these exactly correspond to our primary schools. The materials to work upon were precisely the same in all respects, and the difficulties to be overcome of precisely the same nature; but here I witnessed nothing of the drawling, droning manner of learning which too frequently characterizes our style—the manner of dreamers who are suddenly waked up for the moment, and then relapse into slumber until they are roused again. The children here, on the contrary, were all awake, and eagerly desirous to prove that they were; nor did I see a single child in any of these schools that could be denounced as idle, nor one instance in which they seemed to be covertly attempting, by secret tricks between neighbors, to create an interest for themselves outside of the lesson. I was struck too, as I have said before, with a certain air of confidence and mastery with which they performed their parts when called upon. They scarcely ever hesitated for a moment in answering the questions put to them, but proceeded at once to the business in hand as if conscious that they were prepared for it. In all these I perceived easily the soundness of the previous teaching, which was producing its

* This "laut" method was first developed and expounded by Stephen—seventy years ago—with some modifications suggested by Krugg, and prescribed for general adoption by the Prussian Minister of Education in 1841. I found it employed in almost all the schools that I visited, though with various degrees of strictness. It is a perfectly natural method, and ought to be introduced along with the "Schreiblese Methode" into our elementary schools. Sir James Kay Shuttleworth, when in Downing street forty years ago, made an attempt, which proved fruitless, to introduce it. The failure was greatly due to the singularly crabbed and uninteresting book (*The Phonic Method*), compiled under Dr. Kay's direction, which was intended to initiate teachers into the method. All praise is, however, to be given to Sir James for the earnest and enlightened spirit in which he then worked up the improvement of the methods of elementary teaching. It is not his fault that the Revised Code has so long pursued its disastrous course, ignoring or repudiating every principle of true education. Had his wishes been realized, we should have had a very different kind of teaching in our schools from that which has for years prevailed, and still prevails.

effects on the current lesson. They did well because they had been used to do well, and had been taught how to learn.

I next proceeded to visit Miss Meissner's private kindergarten, one of the two established in Weimar. The other is Miss Minna Schellhorn's, of which I shall have presently to speak. The children (forty in number, ages from three to six) were engaged, when I entered, in movement-games (*Bewegungspielen*). There was one of these, which I had never seen before, intended to test and improve the sense of hearing. A child in the middle of the circle was blindfolded and then led up to one of the other children, who was to sing "la-la-la" in its ordinary voice, and the point was for the former to detect by ear and touch also who the singer was. If successful, the detected child was to take the place of the other, and so on. This game might be varied, but was not in the present instance, by requesting the blindfolded child to name, from touch, different articles in the room, or to tell what part of the room he is in.*

The children, after the games were over, sat down to work at folding paper (*Falten*) and pricking out forms on paper ruled in squares (*Aussteechen*), the outlines of the figures of horses, birds, houses, etc., having been sketched beforehand by the teacher in pencil. The little things seemed much interested in this employment, and gave up their small minds earnestly to it. They were doing something themselves. Every now and then they held up their performance to the light, and were pleased to see the figures growing under their hands. Miss Meissner, active, brisk and intelligent, was as a center of light and movement to the whole body, which she inspired with her presence.

My next visit was to Miss Minna Schellhorn's large kindergarten of about 100 children. Her rooms are very spacious and airy, and there is a garden (with children's flower-beds), and a large play-ground with an ample shed, in which much of the mingled play-work goes on when the weather is fine. I found one division of the children engaged in paper-modeling (*Falten*), another in arranging slips of paper in geometrical forms (*Verschnüren*), and a third in laying little wooden tablets in various positions with regard to each other, constituting forms of "life," "knowledge," and "beauty" (*Legetäfelchen*). As the children here were remarkably apt and intelligent, I stood by watching them at their "work." To the eldest, engaged in "Falten," pieces of buff-colored paper (four inches square, exactly measured) were given out. They were first asked to explain the form of the paper. "What is the form?" "A square." "How many sides?" "Four." "What about the sides?" "All are equal." "What about their position?" "Two are perpendicular, two horizontal." Then followed questions on the angles, their number, kind, etc., all of which were promptly and correctly answered by all the children. They were then directed to fold the paper so as to make two of the parallel sides meet. "What figures have we now?" "An oblong." "Restore the original figure, and compare this with it." "Each of the oblongs is half as large as the square." "How do you know that?" "Compare the length with the breadth of the oblong, what do you notice?" "The length is twice the breadth." "Show that measure." Many more questions of this kind were asked, and thoroughly well answered. Then the square was folded diagonally, and a new series of observations made on the triangle produced. "How many angles?" "What kind of angles?" "One right angle and two acute angles." "What is an acute angle?" "What is an obtuse angle?" "Have we an obtuse angle here?" etc., etc. The answers were not always technically expressed, though they generally were, but they invariably showed correct observation (*Anschauung*) of the facts with which their minds were brought into direct contact. I was delighted with the intelligent, artistic guidance of the teacher (Miss Schellhorn), and with the almost equal intelligence with which the children followed her lead. These preliminaries over, the teacher said, "Now fold some forms with your paper," and left them to take another class. I stood at the table myself, watching the deft little fingers rapidly employed in "conforming the outward show of things to the desires of their minds," and producing, each according to his or her own pleasure, boxes, boats, seats, crosses, salt-cellars, and other very complicated shapes, of which I did not get the names. The children begged to be allowed to give me the results of their handiwork, and I accordingly, after expressing my genuine satisfaction, brought them away with me. If any one chooses to contend that these children were not usefully (I know that they were happily) employed in their "Falten," I can only reply by asking for a definition of useful employment. Observation, expression, reflection, were all exercised; and if nothing else was done,

*A variety of such experiments in the use of the senses may be found described in a very valuable little book which I strongly recommend to parents and teachers, "Exercises for the Improvement of the Senses for Young Children" (Bell & Daldy).

they were gaining great aptness in the use of their fingers.

I next directed my attention to the work of the children (the youngest of all) who were employed with the tablets. It was delightful to see the thorough absorption in the work of forming seats, crosses, tables, houses, etc., on the flat desk, and the glee with which they contemplated their little performance—talking, laughing and criticising each other's work. One child, after looking for a moment at what he had produced, shouted with delight; another, who had been earnestly employed in making a house which had tumbled down several times, having at last succeeded, clapped her tiny hands over the finished work, and nudged her neighbor to invite her to witness and share in her joy. If there are any of my readers who amuse themselves with the idea of a grave professor of advanced years sympathizing with these innocent sports and occupations of children, and calling that education, I cannot help it. After years of both study and practice of education, I cannot frame a definition of it, which, as including development and training, does not strictly apply to the exercises in which these little children were engaged. Their active powers, bodily and mental, were elicited by an all-sided culture, and what is supremely important, with the continual accompaniment of satisfaction and pleasure. No harsh compulsion, no tears, no idleness did I observe in this or any of the kindergartens of Germany. All were busy, all earnest, all interested, and this because they were at work (for the games were work) on their own account. The labor itself was a pleasure (*Labor ipse voluptas*), because it was their own labor.

The morning's business was now coming to a close, and it was finished by an exercise which produced immense excitement. Some twenty-five of the children, seated on both sides of a long table, began, in imitation of the teacher, to beat time on the table, at first very slowly, then quicker and quicker,—at first with one finger, then with two, three, etc., then with the whole flat hand, and lastly with the doubled fists. This was apparently very satisfactory, but the next was the *chef-d'œuvre*. It was to imitate a storm. First, the finger-tips tapped to measure on the table represented the dripping rain, then louder tapping showed that the rain was growing to a pelting shower. It went on louder still, while now and then smart simultaneous blows with the flat hand indicated the lightning flashes; these at last were succeeded by fast, loud, redoubled blows with the closed fists of both hands, making a tremendous crash of thunder. This was the climax of the storm, and it created quite a furor among the children. They were, in fact, intensely delighted, and—shall I confess it?—so was I. I left Miss Schellhorn's admirable kindergarten with feelings of great respect for her, and with increased confidence in the system which she so artistically administered.

VISIT TO GOTHA.

On the 10th of September I found myself in Gotha, my principal object in visiting which was to examine the great kindergarten institution presided over by Professor Köhler. I may say at once that few things in the course of my life have ever interested me more than my visit to "Das Gothaische Lehrerinnen-Seminar und seine Zweiganstalten"—the Gotha Normal School for Governesses and its branch establishments. It will be seen from this title that its main object is that of training female teachers. The kindergarten itself is only one of its departments—a sort of practicing ground for the kindergarten governesses. The institution embraces, in fact, six departments—1st, the kindergarten (for children from two and a half to six years of age, fee about £1 16s. per annum); 2d, the girls' school (age from six to fourteen, fee about £2 14s. per annum); 3d, the higher girls' school (*Fortbildungschule*), (age from about fourteen upwards, fee about £4 10s. per annum); 4th, the normal college for kindergarten governesses (girls above sixteen years of age, fee £9 per annum); 5th, the normal college for teachers preparing for the primary schools (fee £9 per annum); 6th, the boarding house (£45 per annum, including the school fee). All these departments are closely connected with each other, especially by the principle which reigns throughout and determines the character of the instruction. That principle is that of Froebel, of which, both theoretically and practically, Professor Köhler is a distinguished expositor. He has written several separate works upon it, and his *Praxis des Kindergartens* (in two volumes, to be followed by a third) is one of the best guides to its practice. After receiving from my interview with Professor Köhler a very favorable impression of his benevolence and intelligence, I went first to the lowest class of the girls' school, where I found twenty-two children (ages six and seven). The class consisted, I was told, properly of thirty children, but eight were absent from measles. They were marching very prettily to a measured rhythm of three beats, the last of which

was strongly accented. Then they were supposed to come to a wood, where they all lay down to sleep, from which they were aroused by a loud "cuckoo:" from the teacher. Then they all jumped up, shouting "cuckoo!" dancing, and clapping hands, and went to sleep again. It was, in fact, a kindergarten exercise introduced into this elementary class of the girls' school.

I next went to the kindergarten itself, where I found the same teacher who had just before been in the girls' school. The children, about thirty or forty in number, were variously employed—one division, the youngest, were engaged with little sticks (*stäbchen*) making various forms of objects on the table. One of two and a half years old was very earnestly busy, but not very successful. She did not quite perfectly "conform the outward shape of things to the desires of her mind." Now and then she looked around to see what her neighbors were doing, and then, appearing to have gained a hint, went on again, nodding her head with approval when she had made a point. There are many exercises with *stäbchen*; amongst others, exercises in counting.

At another table the children had needles, with coarse thread, which they passed through holes already pricked as a pattern for them in cards, thus producing a sort of embroidery (*Ausnähen*). This, though, I believe, very common, I had not seen before. The effect was pretty, and the children seemed much pleased as the picture grew under their hands.

I thence passed into the sixth class (lowest but one of the girls' school), about twenty-five in number, ages seven and eight, where a very intelligent and painstaking teacher (Miss Ulrici) was cleverly developing the principles of *Umlaut;* that is, the modification of the vowels in nouns. I was surprised to hear how fully these little ones entered into the lesson. They answered the questions put to them exceedingly well.

In the next class that I entered the lesson was in English, about thirty girls, of whom fourteen (thirteen or fourteen years of age) were here learning English. The teacher (Miss Rothstein), who is a pleasing person of gentle and refined manners, was conducting the lesson. Each girl had before her "*Earth's Many Voices*" (published by the Christian Knowledge Society), a nice little book, well adapted to the purpose. The lesson was given in German, not English, and all were most attentive to it. The pronunciation was far from good—too soft and mincing—but they all seemed to understand very well what they were about, and translated the text into German quite fluently.

In the afternoon of this day I was present at what was called a trial lesson (*Probe Aufgabe*) in the kindergarten governess department. Twenty-four children came merely in to be experimented on by six teachers in the presence of all the other teachers (who took notes), and by Professor Köhler himself. Dr. Haas, also of Wiesbaden (whose kindergarten I had visited the previous summer), and another gentleman, were present. Five out of the six teachers successively told stories to the children. The sixth superintended a lesson in gymnastics, in which there was much jumping over spaces marked out by long staves laid on the floor, etc. The success in story-telling was various, but all the teachers spoke with great fluency and distinctness. I have frequently had occasion to notice the firm and unhesitating manner in which German teachers speak in their classes. There was never any stammering, hesitating, bungling, or recalling words, as is common enough when English teachers deliver themselves in a set narrative or speech. All seemed to know exactly what they had to say, and how to say it; yet, as I have said, the success of these teachers in their trial lesson, as tested by the effect on the children, was various. Some laid hold of the children's eyes, ears and minds with remarkable power, and kept their attention riveted on the story. In one instance the eyes began to wander, and symptoms of weariness were obvious, and a little member of the class went fairly to sleep. On the whole, the interest displayed by the children under these repeated doses of words was far less vivid than that manifested when engaged in the "occupations" in which they were themselves the agents. It is what children do for themselves and by themselves that most interests and most effectively educates them. The present instance, however, does not, perhaps, fairly represent the case. It could scarcely be expected that the children should maintain their attention at full pitch under the infliction of five successive doses of words.

At the close of the sixth lesson, which came in very opportunely, the session was broken up. In about ten minutes after, however, it was resumed, without the children, in another room; the object now being to criticise the lessons just given. One teacher after another rose at the bidding of the Professor, and gave what appeared to be very frank and outspoken opinions on the performances of their colleagues. I could not, in consequence of my deficiency in German, understand all the

points brought forward, and shall therefore venture on no criticism of the critics themselves. At the end of a long discussion Professor Köhler briefly summed up the arguments.

The next morning at seven o'clock, I again presented myself in the same department of the institution to hear two lectures of an hour each, to be successively given by Professor Köhler.

The first lecture was on *Methodik*, or Method. It was entirely *viva voce*. No one of the fifteen young governesses present took a single note, but their fixed attention was very obvious. The lecture was very simple in substance (almost, indeed, to excess), and the tone and manner those of a master of the art of lecturing. The motive or subject was the laying of the grand work of clear representations (*Vorstellungen*) in the mind, and the first part consisted of an analysis of numbers, the second of that of forms. It was shown how the conception of number arises from the observation of a plurality of concrete things. A great number of instances of every kind were adduced, and the proposition laid down that "what is true everywhere, at all times and in respect to everything, must be general and abstract," and hence the use of abstract numbers. Questions were frequently put to the class, and bundles of little sticks used by the students by way of illustration. Then the conception of form was analyzed, the proportions of the circle being minutely investigated.

The second lecture, "On the Theory of the Kindergarten," to a new set of students, twenty-five in number, and younger than the others, followed the first after an interval of about five minutes. It was, of course, one of a series, and the subject was the exercises of which the cube is capable. Every student was required to do herself with the cube what she was as a teacher to require from the children. The rigid enforcement of this demand on the attention became at last, I could perceive, rather wearisome. The professor, however, would take nothing for granted, so the cube was made to show off every power that could possibly be expected from a well-behaved solid. Anything more exhaustive—not to say exhausting—in the way of a lesson (which it was rather than a lecture), I was never present at. The proof of the cube's capabilities was complete and overwhelming. I do not say there was too much of demonstration—for one never knows what too much is—but it did occur to me (as I have remarked before) that the teachers of kindergarten governesses in Germany certainly give their pupils extremely little credit for native intelligence; by which I mean here the power of thinking for themselves, of dispensing with continual guidance and help from without. I make this remark with some diffidence, however, in the case of so eminent a teacher as Professor Köhler, especially as I had witnessed in the previous lecture to the elder students a greater, though still very slight, demand made on their thinking powers. The question has been touched upon in a previous page, but as it is one of great importance, and forms almost the only ground of difference between myself and most of the heads of kindergarten colleges I met with in Germany, and applies, *à fortiori*, to our own normal colleges, I may venture to re-discuss it here. It is usually thought that the testing a teacher's powers is his competency to "communicate," as it is called, the knowledge that he possesses to his pupils. If we find him earnest in his work, intent in dealing out facts which he knows to his class, and giving them clear explanations of what he conceives to be difficult, we generally pronounce him to be an excellent teacher. The test is, however, fallacious; for, after all, it is more than possible that he has communicated (that is, that the hearers have received and incorporated) little or nothing of his prelection, and that their minds were simply passive under the torrent of words with which he has drowned them. He has taught, certainly, but they, after all, have not learnt; and it may happen, and indeed often does happen, that just in proportion to the care with which he has mixed their food for them, is its unsuitableness for their nutrition. He has, in fact, done for them what, if they were to gain strength and power from the lesson, they ought to have done for themselves. He has been hard at work, and they have done little beyond looking on. Assuming moderate attention, or at least the appearance of it, on their part, they may have gained now and then, in a fragmentary way, something which happened to be *en rapport* with what was already in their minds; but the doubts and difficulties which at the moment suggested themselves, and the solution of which by their own reflection would have been most valuable to them, have been repressed by the necessity imposed on them of trying to keep up with the long strides of the teacher advancing in his way. They quicken their steps, but find a mist in the path, which thickens as they proceed. They hear but cannot see their leader, and at last give up the attempt to overtake him. The rest of the lesson is therefore utterly useless to them, and they cease to give any heed to it.

Now, suppose, on the other hand, that the teacher, instead of assuming that his knowledge of the subject in hand, and his power of telling and explaining, constituted the proper qualifications for his office, had assumed, on the contrary, that his business was, before everything else, to elicit the pupils' powers, not to display his own—to make them think, not to think for them—to make them do the talking and explaining, not to do it for them—to receive, not to give—his plan of action would have been altogether different, and the results would have been different.

He would have thought to himself: I know well myself the subject I have to teach these students, and my knowledge will enable me to direct their attention to its various points of interest, but it will be of no service to them simply to tell them what I know. My knowledge, so far as it is the product of my own research and thought, cannot possibly be communicated to them. In order to possess it, they must themselves go through the processes by which I gained it. My business, therefore, is not even to attempt to impose it didactically upon them, but to put them in the way of obtaining it themselves. The function of a teacher is to get his pupils to learn—to learn for themselves—by the exercise of their own powers. But what is "to learn?" To learn is to know, and in the true sense of the term we know, not what we have been told by others, but what we have observed and thought out for ourselves. Knowledge, which we can properly call our own, is the result of our own experience—not the experience of others. What I have to do, then, is to make my pupils learn through their own personal experience. This is a reality—a matter of fact. The experience of others, the results of that experience, may in time supplement personal experience, but it cannot, in forming the mind, be allowed to supersede it, and is therefore to the elementary student an unreality. It is a fact which does not concern him. What does concern him—vitally and indispensably—is the exercise of his own powers, and by this exercise I mean not the mincing over again what I have minced for him, but the practical contact and contest of his own jaws with the food, and the conversion of it, by the forces of his own stomach, into "the blood which is the life." My object, then, is sufficiently defined. It is to utilize, by all the means within my compass, the powers that God has given to every human being, and to do nothing which shall tend to neutralize them. And I know, from my study of the nature of the mind, and from my observation of the mental activity of children in their self-teaching, through natural circumstances, and in kindergarten and infant schools, that children have minds, and can be got to use them if the proper means are employed. My aim, then, shall be, whether I have children merely as to age or children as to knowledge, to teach, not to tell and explain what I know (since by so doing I should deaden, or at least neutralize, their powers), but to animate, stimulate, quicken, and guide them, by requiring self-teaching, self-action, and self-education.*

Now, if these principles are grounded in nature and truth, I cannot but believe from what I have seen, that both the teachers and the taught in Germany as well as in England have something still to learn.

I wish to add a few words on a point intimately connected with the foregoing discussion. I noticed in Germany what is too common in England—the extraordinary tendency of teachers to make their teaching, or rather the result of it, prematurely regular and systematic. Hence the almost fanatical attachment to rules and formulæ. The teacher thinks the pupil has done nothing unless it is reduced to rule and system. In other words, he is so intent upon the production of the flower that he neglects the culture of the growing plant, which, after all, should be his main concern. The premature introduction of the systematic and scientific often stunts or even stops the natural development of the mind. That distinguished teacher, Diesterweg, thus puts the case generally: "It is not what is complete and already made, but that which is individual, that which is, that concerns the learner. The true teacher does not show his pupil the ready-made building, the product of a thousand years' labor, but guides him in shaping the building stones, carries up the building with him, teaches him how to build." To this he adds: "The so-called scientific method is deductive, synthetic, progressive, logical, and often indeed in the most cases purely dogmatical. The elementary method (that suited to elementary teaching) is inductive, analytic, regressive, heuristic (from *Euristo*, I find out). The former consists in proceeding from above to below, the latter in proceeding from below to above. In the

* It is much to be regretted that these principles have not yet found their way into our own primary school instruction. Dr. Morell (Report for 1873-74) telis us that in reading, for instance, he could "count up on his fingers" the schools in which it was taught so as to bring out expression, etc.; by which he means, as appears from the general tone of his report, schools in which the children are taught to think of the meaning of what they read, and, in fact, to use their active powers.

THE PRACTICAL TEACHER.

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FRANCIS W. PARKER, EDITOR.

Honest investigation and a courageous application of the truth when found.

There never was a time in the history of this country when the progress of education was so great as now. It is safe to say that to-day one hundred books on pedagogy are read and studied to one, ten years ago

Educational periodicals are multiplying on every hand. They come to us laden with discussions of methods and principles. Diffusive, long-winded essays have had their day. The attacks on the "New Departure," and so-called "New Education," take up less space than formerly. The immovable conservatives, with their backs against the old fortress, have fired nearly all the shot out of their smooth-bores, and are plaintively appealing to high authorities for something more effective to quell the advancing enemy.

Nothing is more delightful than to see our contemporaries in educational journalism so full of good words. An occasional paragraphic shot glides off without leaving a scratch behind, while close to it is to be seen a full exposition of some so-called new method.

A better indication of progress even than the improvement and increasing number of educational journals, is the formation of Teachers' Reading Circles. More may be confidently expected from these associations than from any other educational movement ever started in this country. It makes my heart thrill with joy to read and hear of the good work.

Teachers who think of their work will surely carry their treasures to the children, and the slightest change for the better in the work of the children will reveal to the teacher how much lies beyond. If there is any meaning in the phrase, "The New Education," it is this: finding something new and true for the children. The attitude of the teacher's mind toward the truth settles the whole question. Fixed beliefs incarnate themselves in human beings and make bigots. I know a man who acts as if the a b c method and himself were one and inseparable. Attack the method in his presence, and it is taken as a personal insult. I know a woman who clings to grammatical analysis as if it were her only hope of salvation. These persons are to be pitied. The horizon of their knowledge has settled around them as a solid, impenetrable wall, a terrible warning to all who find *the* method and cling to it as the anchor of all their hopes. Pedantry long ago monopolized the teacher's desks, for, alas! there was no other commercial value for their wares, and such wares are cheap. The schoolmaster became a rigid and fixed "I know it all."

These reading circles show plainly that the horizon is lifting, that a new day is dawning; that tens of thousands of honest teachers in our land are seeking for the truth that shall set them free. All hail to the Teachers' Reading Circles!

Let us have plenty of fresh, free, earnest, honest discussions. Let them be entirely free from the slightest personal animosity. How can we, my dear teachers, standing as we do upon such holy ground, servants of the Most High, working out His design in human nature into human character, how can we, how dare we make a personal matter of that which is so sacred! Dogmatism, too, should be banished from our hearts. "Now we see through a glass darkly, then face to face." Let us continually turn back upon our strongest belief and search to find whether the grounds for that belief are safe and sure. Bigotry and dogmatism are not confined to conservatives alone. There are bigoted kindergartners and teachers of improved methods; they stand like guide-posts immovable, pointing the way. They declare that their way is the right and only way. Is it not better for us, teachers, to say in the language of a certain old lady, "We are all poor feeble creeters." It beseemeth us not, while looking through the glass darkly to assert that we see the whole truth face to face. In this day we can

only "know in part and prophesy in part." Lack of dogmatism does not prevent teachers from being very earnest and enthusiastic in their work. The highest and best enthusiasm, indeed, comes from an overpowering conviction that so much which is grand, good and beautiful is yet to be given, yet to be striven for. Dogmatism and bigotry fix, shrivel and wither. The search for truth gives everlasting growth.

But there is something still better than works upon pedagogy, educational journals and reading circles: it is the child-loving, thoughtful, earnest teacher. No matter how small her salary may be, no matter how poor the school-house, no matter if her name be never heard beyond the narrow precincts of her own district, the power she exercises for the good of one child moves the world. "They may forget the singer, but they'll not forget the song." There are thousands and tens of thousands of just such teachers now working in our land. Toil on, then, brave and true hearts, and falter not, with your hands in His hand and your hearts close to the child's heart.

STRUCTURAL GEOGRAPHY.

II.

The application of a principle without a definite understanding of its limitations destroys the force of the principle itself.

Begin with a whole and go to the parts, is a generally accepted principle. Every whole must first be synthetized before it can be analyzed, so it is just as true to state that we go from parts to wholes.

This seeming contradiction has been the source of much trouble to students of pedagogy. There is no doubt that a child can learn a whole word much more easily than he can learn its parts separately. It is no less true that before a child can learn a whole word he must synthetize the parts. In hearing, the successive sounds that go to make up a word come into the mind one by one. In reading, also, the letters must come in one by one. In other words, there can be no conscious analysis without synthesis, and no act of synthesis without analysis. To affirm that one method grows out of analysis and another out of synthesis is absurd. The solution of the apparent inconsistency is found in the fact that the mind synthetizes unconsciously. Any attempt to make the unconscious acts of synthesis conscious, weakens the mind's automatic power, until, at least, the unconsciously synthetized whole becomes so clear that when made an object of thought it can be easily analyzed. Unconscious growth in the main means unconscious synthesis. A knowledge of this primary and perpetual power of the mind is of the utmost importance to teachers. For the lack of it has caused an immense destruction of that which the mind unconsciously constructs.

The foreordination of the teacher that the child must go through a painful process of conscious synthesis before he can analyze, is in direct opposition to one of the most powerful mental laws.

There are two kinds of wholes,—wholes of sense grasp, and wholes that lie beyond the sense grasp; both kinds are made up of elementary ideas that correspond to external attributes. The wholes which lie beyond the sense grasp are usually called wholes of the imagination. But the difference between the two, those of immediate sense grasp, and those of the imagination, do not seem to differ in the power or faculty that combines them.

Indeed, they appear to be combined by one power,—the power of the mind to synthetize. Granted, then, that all analysis must begin with wholes, the pertinent question is: With what wholes can the mind begin? It is self-evident that the mind depends entirely for its analysis upon the objects of thought that can be brought into consciousness from the memory, or unconsciousness, or from the external world. The attempt to analyze that which is not in the mind is, probably, the most common and the most universal mistake in teaching. This mistake has its logical sequence in empty word learning; the mind has nothing else to work upon, therefore it acts upon words. With what wholes can we begin? I have already answered this question,—*with those alone which can be brought into the consciousness.*

It makes no difference what the external or absolute whole may be in reality, the mind depends absolutely for its action upon the wholes already within it. That the elementary parts of these wholes either come in from the external world or are awakened by external stimulus, no one will deny; that there is a steady growth of the mind from its reception of the first elementary idea to the last is no less true; and it is equally true that the mind is constantly forming wholes out of elementary ideas. Not until a whole is formed can we go to the parts. It must also be

granted that any and every combination of elementary ideas is to the mind a whole.

Probably no concept in the mind contains all the elementary ideas in relation, that exactly correspond to the attributes of any external object. What the thing is, in itself, remains a mystery; what it appears to be to the mind is knowledge, and knowledge is primarily a means of mental action and mental growth. That knowledge is best which brings about the most healthful degree of mental action.

The all-important pedagogical question is, When can we begin to analyze a whole? As I have said before, when the whole can be brought into the mind. But there is another seeming paradox here; if the whole is in the consciousness, what need is there of analysis? We must seek for the purpose of analysis to answer this question. There is no doubt that wholes are grasped by the mind in outline: every day's experience in seeing objects proves this. If we attend to an object, we are conscious of grasping the outline first, and then that turns our attention to the details that make up the parts. The purpose of analysis, then, is first to bring more clearly into consciousness the elementary ideas that make up the whole; second, to relate the parts to the whole, and the whole to the parts; third, a succession of judgments, or inferences, which become an integral part of the object of thought or concept; these sink into the unconscious, or memory, to be recalled. The truthfulness of the judgment, or inference, depends primarily and absolutely upon the number and relative distinctiveness of the elementary ideas that make up the concept. There is a time when we can begin with a whole because it is in the mind; a time when we cannot begin with a whole because it is not there. There is no human power that can summon a whole into a child's consciousness because it happens to exist in the external world.

Many very wise pedagogues reason after this fashion: "The World is a whole in itself, therefore begin with the World to teach geography." So the fatal attempt is made to bring the whole World into the child's consciousness as an inceptive step in geography. "Now logic is logic." The World is but an infinitesimal part of a greater whole, the Cosmos. And this Cosmos is external to the child's mind; therefore make the little ten-year-old child grasp the concept of the Cosmos. Why not, if the rule is to go from the external whole to the external part? This great error has arisen, I think, from an uncontrollable tendency of teachers to make their last and highest generalization the first induction of the little child; aflame with a final discovery, the enthusiastic but unwise teacher seeks to foist it upon unripe minds. Four hundred years have not allayed the world's wonder of the great generalization of Columbus. The child must first take the whole world or nothing. It may seem heretical to propound the question: Of what use is the knowledge of the round Globe to the youthful student of geography? What more than the causes of light, heat, the changes of the seasons and the tides,—causes that took wise men of this world thousands of years to discover? Is it not far better for children to rise by induction through the study of results and appearances to some apprehension of the great globe, than to try to make them swallow at one great gulp the globe itself? There is no objection, of course, to sing in the smallest child's ears Peter Parley's famous song, "The world is round and like a ball." But our question is not one of belief alone; it is one of education; not what a child can be made to say, but what he thinks and can use as objects of thought. True, very pretty lessons can be made out of a sphere and lighted candle. The sphere in itself is a very important object of thought. But the slightest apprehension of the reality of the sphere in its relation to the world, is far beyond the range of a child's mind.

How much better it is to lead a child to observe the rising and setting of the sun, of the moon, and stars, the lengthening and shortening shadows, with accompanying cold or heat, the expansion of the horizon upon heights; and by stories of travel, prepare the minds of the children for broader concepts and higher generalization.

The old, old mistake is to get the child's mind as far as possible from the reality—to cloud and bewilder the brain with vague, intangible fancies of the mysterious unknown.

In the theory, at least, of teaching the natural sciences, the question of how to begin is thoroughly settled. No intelligent teacher would claim for a moment that children should begin with the highest classification or generalization in the study of plants, animals or minerals.

The explorations of Humboldt and others, together with careful topographical surveys, have enabled Ritter and Guyot to make geography as much of a science as that of Botany or Zoology.

Each continent, if not endowed with life itself, is an organism that conditions life. Each part depends very materially for its life-giving power

upon the whole. True, the relative position of a continent upon the globe's surface essentially modifies its life-giving power, yet it can be claimed that to know the thing modified before studying the modifications of that thing is both sensible and reasonable.

There is no doubt that much of mental and spiritual action still lies outside the realm of human knowledge. The general laws of the imagination, however, are well known.

That which is beyond sense-grasp or actual observation can only be realized by the synthesis of sense-products and judgments already in the mind. All power to measure truth is absolutely limited to the truth within us—the measure of truth, but not the summation of truth.

We see with what we have seen; we hear with what we have heard; we think with what we have thought; we do with what we have done. Through the realities of observation we enter into the realities of the imagination.

Some educational philosophers are continually decrying the so-called method of investigation, and urge with great persistence and many repetitions, that reading and the study of books is the royal road to learning. Alack, the day! In my experience, the method of investigation has as yet scarcely crossed the threshold of our common schools. These great leaders of thought, whose influence for good or evil is immeasurable upon the children of to-day, fail utterly to explain the basis of imagination by which alone a child is able to read or understand a book. In reading or studying a sentence, the primary act of the mind is that of synthesis or imagination. Each word should recall an idea. All ideas are directly or indirectly sense-products. The relations of the ideas must have been previously acquired by the mind either through observation or imagination; else the sentence is meaningless to the child. The absurd charge is often made that believers in the method of investigation do not believe in the study of books. The charge itself would be too ridiculous to refute, did it not too often form a stock argument against reform in education. What does this imputation really mean? It means that reformers in education would limit all knowledge to the sense-grasp, which, if it were true, would sink the human being to the level of the brute—yes, even below it, for it can scarcely be doubted that the bird builds a mental nest, the beaver the dam, and the cow thinks of the cooling spring towards which she wanders. The truth is that all products of observation are worthless unless they become the means by which the imagination is developed and cultivated.

The principal means of this cultivation is language. Reading, or the study of text books, is the open door through which inherited power reaches inherited knowledge, but the mediation of this meeting is brought about only by the *cultivation* of the inherited power. The teacher who rejects this cultivation and begins with text books, fails to prepare the child to think by means of words. The teacher (I do not know of one, by the way) who rejects text books, and uses only the method of investigation, is developing undirected power which fails of higher uses. I can easily imagine a child taught to read who will not thereafter love to study books, but I cannot imagine any child taken by skillful teachers into the realm of nature who will not by such teaching become a life long and persistent student of books. Good friends of mine have often and repeatedly charged me with discarding the use of text books. I shall make no apology for absolutely denying this charge as false and misleading. It is true that I would not confine the helpless children to the limits of one small book and one man's opinion on any subject, but would give them the best that the world has to offer, always remembering to adapt the thought to the mental grasp of the learners. If I am not mistaken, the most prominent advocates of text books are those who hold strictly to the use of one text book upon one subject, while I would (and have for years) advocated the use of all the best text and reference books that can be found, bearing upon the subject taught.

Now let me try to apply what I have already said, to the subject of Geography. There is a great world that lies entirely outside of the sense-grasp. The scientific study of geography should lead the student directly into that world, so that continents, islands and oceans, "with all that in them is," will become real and distinct objects of thought. How can this be done? Only by means of sense products, judgments, and inferences gained from objects that lie within the sense-grasp. Whatever these products are *must* the world be to us. They determine and fix the absolute limitations of our imagination, and could we throw aside the immense power of traditional prejudice, we might see how simply, beautifully, *grandly* the world in its immense outline may be built into the child's mind by means of intuitional products.

The slope from the hill's summit to the river may become hundreds of miles long, reaching from the continental axis of North America to

the river bed of the Mississippi. Out of the simple brook basin, with its meadows and forests, the child creates in time the vast basin of the Amazon. The wash-out caused by a severe rain is the type of the immense canons of the Colorado.

I need not carry these illustrations farther. Out of the seen is created the unseen. The phenomena in physics of even a gutter may be used to lead the child up to the apprehension of a great continental organism.

Elementary Geography consists in furnishing the child's mind through observation and investigation with the sense products and judgments necessary to the imagination of the world that lies outside of the sense grasp.

Under this definition, the teachers work in elementary geography becomes exceedingly definite and practical. Geography takes its place with all other natural sciences and is to be taught by exactly the same method. The question of the order of objects of observation is a very important one, and I shall try to discuss it fully in these columns.

One very common fallacy in teaching elementary geography should be discussed in this connection. The Germans have what is called the "Circle Geography." The teacher begins properly with the immediate objects of observation, and then gradually enlarges the circle by taking in the next village, town, county, or province. This is called going from the known to the unknown by gradual stages. Look at it from a psychological standpoint. There is a vast difference between territorial proximity and psychological nearness (the line of least resistance along which the mind advances).

When the child is prepared by his immediate environment to take one step farther, what should that step be? We can give two answers to the question; first, he should be led to imagine that body of land that his cultivated power enables him to synthetize most effectively. Following the general laws of synthesis which we have given above, he should be led to imagine a whole that will be of the greatest possible use to him in deduction. Now a continent or a vast river basin may be easily imagined (*i. e.*, psychologically near him), while the next town, from its very complexity (unless he has visited it, and it is well known to him), may be exceedingly difficult for him to imagine. Then, too, he must discriminate sharply between the gaining of useful information, and the symmetrical, all sided scientific upbuilding of a compact body of knowledge in the mind.

Much general information should be given children from first to last, and they should hear and read of the round world; of other worlds that lie beyond; of near and distant parts of the earth; they should live in their vivid fancies with the Indians, Arabs, Esquimaux and Hottentots. Every child is a born savage, and he delights to live with his kind. But the use of these fragmentary, unconnected facts, which is to arouse curiosity, quicken appetite for knowledge and cultivate sympathy for mankind, should not be confounded with the gradual development of an organic whole, the province of scientific structural geography.

As this whole grows under the realizations of the imagination all the heterogeneous facts will become compactly related.

The shortest, simplest and most useful step from elementary to scientific geography is from the study of the immediate environment to the study of the continent. The reasons for this conclusion I give as follows: 1. The general form of a continent presents a simple organic whole. The form of a continent is more simple, and therefore more easily apprehended, than is an island, a town, a country, or a state. 2. The whole with which we can best begin, is a natural division of land, and not an artificial or political part of a whole. Boundary lines give no hint of any relation of parts to the whole. In my experience in trying to teach the simple forms of continents to pupils who have spent years in studying and teaching the political parts of continents, the almost universal result is that their minds are so entangled in the complexity of these parts that they find great and almost insuperable difficulty in imagining the wholes. It is precisely the same psychological difficulty that we find in teaching the names of letters before the words are taught; lines in drawing before a child is trained to draw the outlines of objects. In teaching anatomy we begin with the whole structure, for it is generally admitted that the study of the whole is far more simple than any one of its parts. The structure of a continent is much less complex than the simplest outline of the human body. 3. There is an immense mental economy in going from simple wholes to complex parts. The time often spent in teaching the outlines of a single state with its surface, soil, products, cities and their manufactures would have been amply sufficient to have gotten a clear picture of the structure, drainage and vegetation of the whole continent. When this is done the political parts may soon become distinct objects in the mind. Corn, wheat, cotton

and sugar-cane grow where? What have boundary lines to do with their growing? The conditions of vegetable growth are traced directly to the continental structure, with the additional and very important element of climate. If a child learns the structure, drainage and climate of the Mississippi valley, he can readily tell the products of each state, as he abstracts it from the whole. 4. The law of going from wholes to parts is, that the first and successive steps are governed by the size and consequent simplicity of the parts. This I tried to show in my first article upon this subject. From the standpoint of those who believe in beginning with the globe; going from that great whole to a state or county is manifestly absurd. First, we think of the continent as one great mass of upraised land. Second, the upraised mass is separated into two great slopes, one long and one short slope. Third, the long slope is broken by meeting slopes of smaller upraised masses; these slopes, with their counter slopes, form the lesser highlands. The continent is now separated into greater and lesser high lands. Fourth, the shorter slopes are broken, like long slopes, by meeting slopes that form coast highlands. Fifth, the meeting of long and short slopes at their lower edges, presents the conditions of a river basin, the two meeting slopes forming a river basin. Sixth, upon unbroken continental long slopes, the river basins, and their rivers are at right angles to the continental axis. Seventh, the river basins and rivers on the short slopes of the greater highlands. Eighth, river basins upon the reverse slopes of lesser highlands. Thus, keeping the whole continent in mind, the parts are studied in scientific order, each part becomes by the study more and more distinct, and the relations of the part to the whole become closer and closer. The great organic whole thus becomes a thing of life and power.

It is a long road from an educational theory to the door of a school room, and still longer to the minds and hearts of pupils. Can this great earth structure be built into the minds of children in the primary and grammar grades? Is this plan feasible? In other words can clear outlines of the great stage of human action and human life be imprinted in the memory, ready to be filled by a life of study and research?

In order to "tell," one needs nothing beyond a form of words which the pupils may reproduce with or without comprehension.

R. H. QUICK.

DICTATION EXERCISES.

R. C. METCALF, SUPERVISOR OF BOSTON SCHOOLS.

Dictation exercises should be short and adapted to the needs of the pupils. Some exercises should contain words requiring the use of capital letters, some the use of abbreviations, some marks of punctuation, some forms of notes, bills, invitations, letters, etc. Every teacher in the lower grades of the grammar and all grades of the primary schools should prepare a large number of such exercises. If selected at hap-hazard or "on the spur of the moment," the teacher will almost certainly fail of adapting them to the wants of her pupils.

Dictate to the class one of these exercises every day. The pupils will write it upon their slates as the teacher dictates. This being done, the teacher writes it correctly upon the board, and the pupils note and correct their own mistakes. If the teacher prefers, the pupils may exchange slates and each mark the mistakes of his neighbor.

In the lower primary classes these exercises should comprise only one sentence; but in the highest primary, and in all the grades of the grammar school a succession of sentences should be dictated, in order that the pupils may learn to break them at the proper places, and use the proper marks of punctuation. If the teachers in the higher grades find this work too difficult at first, they should confine themselves to exercises containing only *two* sentences until the pupils can with ease write them correctly.

Notes of invitation, letters, bills, etc., should be dictated in order that pupils may be taught the best forms to be used, but it will not always be necessary to dictate them *in full*. The opening, including date and address, together with the few closing words and signature, may be all that is necessary, especially with more advanced pupils.

Fifteen minutes should be the extreme limit of time given to one of these exercises, including the examination of the slates. It is better to have a short exercise every day than to have a long one only two or three times a week. Of course teachers must not undertake to examine the slates themselves. Few towns, or even cities, can afford to hire teachers to examine slates. Better results can be obtained if pupils are required to examine their own work and correct their own mistakes. In this, as in all other school exercises, the teacher must learn to economize her time and her energy. But more will be said upon this subject when we come to speak of letter-writing and composition.

"TO BE OR NOT TO BE" DEVELOPED.

O. T. BRIGHT.

An article on certain normal methods, which appeared in THE PRACTICAL TEACHER for February, seems to have ruffled various and sundry feathers in different parts of the country. Mere controversy for the sake of the controversy is of little profit. Unfortunately, teachers are much addicted to this sort of thing, and that, over very unimportant points. A good, healthy discussion, whether upon principles or methods in teaching, is the best thing in the world, provided truth be the object sought, and not the maintaining of traditional prejudice.

The article in question was handled without gloves by several writers in the New York *Journal* of March 7, and the author will at any and all times thank his fellow-teachers if they show him to be in error—the more vigorous the showing the better he will like it. Let us in all cases, however, be careful that statements made for facts are true.

Critic No. 1 says in regard to the article: "A prominent teacher puts in print the following statements: $\frac{2}{1}$ of $\frac{3}{4}$ = ? is an absurdity. The question never has arisen, and never can arise," etc.

The fact is that the writer of the article made no such statement whatever. Hence, that part of the argument of No. 1 falls to the ground for the want of something to stand upon. The critic works himself up a good deal and asks, "How is it possible, with any show of truth, to affirm that the question never can arise?" It isn't possible. The lack of truth, dear sir, came in your first statement.

Farther on he says: "The whole question turns upon the definition of multiplication." Very true; why did you not give a definition?

"It is not true that in mathematics this word implies *increase*." Isn't it, indeed? Who says so?

Bring me one hundred different arithmetics and I will show you one hundred definitions of multiplication which are but one hundred repetitions of the following: "Multiplication is the process of *repeating* or adding to itself one number as many times as there are units in another." They don't vary a hair. Do words mean anything? If this definition is not *true*, why are all the teachers in the United States teaching it?

Webster's mathematical definition of multiplication is as follows: "A rule or operation by which any given number or quantity may be *repeated* or *added to itself* any number of times proposed."

Worcester says: "To multiply is *to repeat* or *add to itself* any number as many times as there are units in another number."

The Imperial dictionary (new) says: "In arithmetic, multiplication is a rule or operation by which any given number may be *added to itself* any number of times proposed." These are fairly respectable authorities, and they are not defining the word to apply to "man, who was commanded to increase and multiply," but as a mathematical term used in the last half of the nineteenth century. Can the editor of the New York *Journal* improve on them?

Dr. Brooks is quoted as giving this definition: "Multiplication is the process of finding the product." And doubtless he also says: "The product is the answer in multiplication." This is luminous to be sure. It must appeal strongly to the understanding of a child. I wonder how such definitions could be "developed."

Critic No. 2, "after a caustic introduction," says: "To my poor benighted comprehension $\frac{2}{1}$ of $\frac{3}{4}$ is *no* absurdity." The editor assures us that No. 2 is perfectly sane and respectable, but this was hardly necessary. Probably no teacher in the world would dispute his statement. It did not need "one of the oldest active superintendents in the United States" to prove what everybody agrees to.

Critic No. 3, "another city superintendent whose authority is unquestioned," constructs much the same argument as No. 2, and so the statement which was never made, nor heard of, nor dreamed of, is conclusively proved to be false; and, thanks to these three Solons, the country is again safe.

Very different is the treatment given to the question by Prof. Shoemaker, of Minnesota. His article is vigorous, clear and possibly conclusive. At any rate he is an opponent whom it is no child's play to meet, whether he is defending a good thing or a bad one, and he meets the question fairly and squarely.

It will be well in discussing questions of this character to formulate one's creed. It should be borne in mind that the writer stated in the article in question, that he proposed to discuss the questions involved from the standpoint of the children who are learning the processes or operations—that is, from the standpoint of a teacher who is in thorough sympathy with such children. In doing this the capability of the children must be taken into consideration and definitions and rules should be those which can be formulated by the children

from their own operations with numbers of things. This subject was very ably discussed in the March number of THE PRACTICAL TEACHER by Mr. Balliet. I wish that every teacher in the country might read his excellent article. Believing this ground to be the sound one upon which to stand, I accept fully certain definitions of what are called fundamental operations which have already appeared in this journal. I accept them not as Colonel Parker's definitions, but because they are those which I have many times drawn from children. That I was led to think specially of the subject by, and that my conclusions are the result of, Colonel Parker's suggestions, I gladly acknowledge. In fairness I ask earnest and candid teachers to look into the subjects *with the children*, and to watch carefully the conclusions of the children.

I presume that no teacher will object to this statement: There are but two operations possible in number—either uniting different numbers into one number, or separating one number into different numbers. Under the first of these we have two processes, addition and multiplication.

Addition is uniting numbers; multiplication is uniting *equal* numbers. Every multiplication is an addition of course. All definitions in arithmetics or dictionaries agree upon this point, and there is not the slightest necessity to depart from the statement. Any process which separates a number into two or more numbers cannot be addition, and consequently cannot be multiplication.

In separating a number into two or more numbers three processes are now recognized by most writers on the subject. Subtraction is separating one number into two numbers, one of which is given.

Division as well as multiplication, furnishes a bone of contention. The Germans use the term "*Dividiren*" in a general sense, and name the two processes under it "*Enthaltensein*" and "*Teilen.*" The two words are exactly descriptive of the processes. The English language, with its beggarly one hundred and thirty thousand words, can furnish but one term, which we call "Division"; but we divide the subject into first and second cases. The distinction between the two processes the German writers sustain with the utmost sharpness, while we pay but little attention to it.

The following questions will illustrate:

(*a*) A boy has 12 cents to spend in oranges at 3 cents each. How many can he buy?

(*b*) A boy has 12 cents to spend for 3 oranges. How much do they cost apiece?

The first process divides 12 cents by 3 cents, The second takes $\frac{1}{3}$ of 12 cents.

It is a pity that we cannot include both in the term *division*, as they certainly are, and have a separate name for each as the Germans have. If we cannot, I should much prefer to adopt Colonel Parker's nomenclature, and call the first *division*, and the second *partition*. In this case the definition for division is separating one number into equal numbers, the size of the numbers being given.

Partition is separating a number into equal parts. The problems under the last always involve taking one or more of the equal parts for the answers.

The term *partition* I like. It is an exact translation of the German "*Teilen.*" The restricted use of *division* is not satisfactory. Can't we have something better? We can, at any rate, save the children from one needless cause of confusion.

At all events, in the question proposed (*b*) there is *no multiplication*, that is certain, and it *is* an absurdity to maintain that there is. A sturdy boy said to his teacher recently, "How is $\frac{1}{4}$ of 12 multiplication? I know it is *not*." I have no doubt some normal school genius might prove that it is multiplication or even addition.

Our friend seems shocked at the allusion to algebra. I take it that several operations in algebra seem very absurd to children for a long time after they begin the study. $5 - 7$ is absurd to the child, but it is no more so than $5 \div 7$. So also $-5 \times -7 = 35$ is no more absurd than $\frac{1}{5} \times \frac{1}{3}$, provided *multiply* means anything. I believe these processes are all orthodox in algebra. Is there no absurdity here for children studying number? Prof. Shoemaker tells us that 5 may be divided by 7, because it contains 7 $\frac{5}{7}$ of a time, or because there are $\frac{5}{7}$ of the 7 in 5. Just so 7 may be *subtracted* from 5, because there are $\frac{5}{7}$ of the 7 in 5. I think it will trouble anybody to sustain the first and reject the second. $\frac{3}{4} \div 2$ means either, how many twos in $\frac{3}{4}$, or it means $\frac{1}{2}$ of $\frac{3}{4}$. The first proposition *is* an absurdity. The second is of constant occurrence, but does not come from $\frac{3}{4} \div 2$.

In any reasoning process in number I understand it to be pretty sound to consider *one* the starting point, or the pivot around which the whole process turns. The child knows *one* in number before he knows anything else. I mean the one that is represented by the symbol 1. Any idea of the value or size of a number must refer to the

value or size of *one*, and any idea of the value of a fraction refers to the same thing.

This *one* I would call a unit, and would not confuse children by calling every other number or fraction by the same name. Hence this definition given by Prof. S., "Multiplication is finding the value of one number with another number as the unit," would be hard for the children to understand since every multiplicand must be considered a unit, no matter how large nor how small. The question is not whether it is *possible* to so teach children, but whether it is *advisable*. How would the definition appeal to a child's understanding as compared with the other? Which would he be apt to formulate?

Please write upon the blackboard, "Finding one number with another taken as the unit is ——" and see how many *teachers* will fill the blank with *multiplication*.

We know that when an apple is divided into two equal parts, one of the parts is called one-half. Why? Simply because it is; that is the name of it. The apple has not been divided by 2. One is one-half of two. Why? Because one is one of the two equal parts of two; the very definition of one-half is involved in the answer. The same is true of $\frac{1}{3}$, $\frac{1}{4}$, or $\frac{1}{12}$. "Why is one inch $\frac{1}{12}$ of a foot?" Simply because one foot was divided into 12 equal parts and one part was called an inch. Prof. S. claims that in obtaining this part 1 is divided by 12. It is *not* so obtained, but comes from the fundamental idea of $\frac{1}{12}$. This is pure *partition*, or the German "*teilen*."

We are told to ask children to reduce $\frac{3}{4}$ of an inch to feet. I prefer to ask them to reduce $\frac{3}{4}$ of an inch to the fraction of a foot. "Would you let him get $\frac{1}{12}$ of $\frac{3}{4}$ of an inch?" Certainly not; but he may, to reduce inches to feet, take $\frac{1}{12}$ of the number of inches for the number of feet, or take $\frac{1}{12}$ of the fraction of an inch for the fraction of a foot. Here is another very simple process: 1 ft. $=\frac{48}{4}$ of an inch. $\frac{3}{4}$ of an inch is $\frac{3}{48}$ or $\frac{1}{16}$ of $\frac{48}{4}$ of an inch. In the comparison the two numbers are reduced to the same denomination. Prof. S. reasons as follows, but claims that in the process he divides a smaller number by a greater. Does he? "Since 1 in. is $\frac{1}{12}$ of a ft. $\frac{1}{4}$ of an in. is $\frac{1}{4}$ of $\frac{1}{12}$ of a ft., or $\frac{1}{48}$ of a ft. $\frac{3}{4}$ of an inch equals 3 times $\frac{1}{48}$ or $\frac{1}{16}$ of a foot." This is well recited, and does the Professor credit. Do you see where he has divided a smaller number by a greater?

Apples are \$4 a barrel. I have \$3. How many barrels can I buy? No barrels. I can buy $\frac{3}{4}$ of a barrel, because I have $\frac{3}{4}$ of the price of a barrel. How do I know? Because \$1 is $\frac{1}{4}$ of \$4 (fundamental) and \$3 are 3 times $\frac{1}{4}$ or $\frac{3}{4}$ of \$4. There is no dividing by 4 about it, because it can't be done.

What difference does it make? is asked. It makes just this difference: there should be consistency in the definition and use of terms, and this is of the greatest importance with children. What multiplication and division mean in one part of arithmetic, they should mean in another. Then when we have taught definitions for the terms we are not obliged to turn a somersault and teach that they mean the exact opposite. And I repeat what I said in the former article, *no occasion ever arises* for it.

I am glad to find one normal school teacher who has nothing to say in defense of the greatest common divisor. The great use of cancellation in everyday life, I judge, is largely a matter of the imagination. One man in five hundred may use it, but that does not justify the prominence given to the subject in arithmetics.

The development lessons given in multiplication and division of fractions by the normal teacher are pronounced very fine by Prof. S. They are also pronounced a ridiculous waste of time. It is not a "grind" to question skillfully provided there is any grist after the mill stops.

The New York *Journal* has given us reports of work done and methods pursued in many different normal schools. Some of the work is *very good, excellent*, and some of it would be a disgrace to the cross-roads country school. It may make sensitive "hearts ache" that these methods should be criticised, but criticised they will be and ought to be. The only pity is that the reports could not find their way into the daily and weekly papers, and thus be open to criticism from others besides teachers.

Will school teachers in general please give close attention to the following remarkable case of *development* reported by Dr. Hoose from the normal school of which he himself is president. He must be proud of it, or he would not report it. To what a condition of utter imbecility would such work reduce children. The New York *Journal* has not a word of condemnation for this sort of rubbish; hence it goes out with the tacit approval of that *journal of education:*

The teacher said, "Do any of you children know how to keep count or tally with marks?" Four or five pupils raised their hands, and the teacher said, pointing to one of the girls, "step to the board." The child went to the board and took up the crayon. The teacher said, "Suppose I should send Glenn to Mr. Wallace's bookstore to get a book

for me, and he does not get the right kind of book; I send him back, and he does not get the right book this time; again I send him, and he failed to bring the right book; but the next time I send him he brings the book I wanted." The child that has been keeping tally now placed four marks upon the board. The teacher pointing to the marks, asked, "What do these marks represent?" The class answered, "The number of times he went to Mr. Wallace's." The teacher, telling the child at the board to keep the tally, of those who missed, called upon a pupil to spell "science." The pupil failed; three others failed. The child placed four marks upon the board, as the tally. The teacher, pointing to the marks, said: "What do these marks represent?" "The number of times they missed." The teacher brought before the class a cup and a pail of water, and asked one of the boys to fill the cup and then pour out the water, and so on until he was told to stop. The child at the board was told to keep tally as before. When there were five tally marks the boy was told to be seated. The teacher said, "What of these marks?" A pupil answered, "Those marks show how many times he filled the cup." The child that had kept tally now took her seat, and the teacher, pointing to the first group of marks, said, "What are these marks, class?" The pupils answered, "How many times he went to Mr. Wallace's." Pointing to the second group, the teacher repeated the question. The class said, "How many times they missed;" to the third they answered, "How many times he filled the cup." The teacher then asked, "What are all of these marks?" One pupil replied, "How many times he did anything." Referring to the last group, the teacher said, "What are these marks?" A pupil said, "The number of times he did anything." The teacher said, "Call them units." "What are units?" The next pupil said, "Units are the number of times they did anything." Teacher—"Is Glenn a thing?" Pupil—"I don't know." Teacher—"What do you think; are you a thing?" Pupil—"No." Teacher—"What should you say then, instead of they?" Pupil—"He." The child said, and the teacher wrote, "Units are the number of times he did anything."

This was satisfactory—hence the teacher made a record of it. "Oh, spirit of Cardan return from the shades!" *"Units are the number of times he did anything!"*

AN EVERY DAY READING LESSON.

LOTTIE E. JONES, DANVILLE, ILL.

Percy's class is waiting to read.

The busy work has been distributed, and the playthings for use in this class are all on the low shelf that extends along one side of the school room.

Here are tops, and dolls, and boxes, and cups, and flags and other things, the names of which the children have before this learned to recognize in script, and a few in printed forms.

There is one object that excites the most interest with the little people, the written name of which has not yet been shown them. It is a real bird's nest resting in the forked branches of a tree, and in it are two tiny brown eggs.

Ruth had brought the nest this morning, with the sad story of how the poor birds who built it and seemed so happy for a short time last spring, had suddenly disappeared and left their treasure with no one to care for it.

What had become of them, whether either or both had fallen prey to the cat, she did not know. We were left to weave our own woof into the warp of this pathetic sight—a deserted home. And right well had it been done, for the nest had already been the subject of a most interesting talk with the children, in which the plumage and habits of not only the sparrows who built this particular nest, but of wrens, and robins, and many other birds, were considered by us, each contributing some information of greater or less value.

This could be the more intelligently done because of a visit paid by the entire school, on a recent Friday afternoon, to an itinerate bird show.

And now the nest has been placed on the shelf with the other play things, to be used by this class in a reading lesson.

The class is called up, and there is a little bustle of excitement as each selects from the shelf the subject of his individual story, for this morning they are to create some fresh reading matter, by making their own lesson.

I notice Fred secures the bird's nest. Mabel has a box; Alice, a doll; Goldwin, a top; Bertha, a bell; Joe, a cup; Percy, a flag; Ernest, a hat; Ada, a slate, and Eddie a toy-axe.

When all are ready to begin the lesson, the eager faces promise ready and hearty response. First I ask Bertha what she would like to read about a bell.

Bertha—I can ring a bell.

This I write on the blackboard as rapidly as possible, saying as I do so: There are no new words I think. Eddie, where is the bell?

Eddie—Bertha has it in her hand.

Can you find the word bell on the blackboard? Point to it. That's right, now, Mabel.

Mabel—You can put slate pencils in this box.

I write this as I did the other, saying as I do so: We have some new words here, what is one, Ernest?

Ernest—Slate-pencils.

Who can point to it? Ada may. Can you find can, too? No? Well, Eddie may. Now, Ada, point to the same word. What is it?

Ada—It is can.

Alice, it is your turn.

Alice—This doll has on a red dress.

Alice, point to dress, and doll, and red. Now, Eddie.

Eddie—This is a axe.

Why, Eddie, what do these hands mean?

Eddie—They mean that I didn't say it right. I meant, This is an axe.

And so the lesson goes on until we have added to the given lines:

I put milk in a cup.

I have a slate.

The hat is on the desk.

Is this a flag?

The top can spin.

And Fred still holds his nest waiting his turn when he tells us: "The nest has two brown eggs in it."

After this is written on the blackboard, and the children find bird, and nest, and brown, Mabel has something to say: "I see something else that is brown. May I get it?" and scarcely waiting permission, she goes across the room and comes back leading a good natured water-spaniel by the ear, saying: "This dog is brown." And Ernest finds a brown hat, while Percy discovers a book on the desk that is bound in brown. Then different ones read the sentence, until, taking up the chalk, I write, "Take back the axe." Eddie hurries away, while all eyes are fixed on the board to see the word axe give place to the word doll, and Alice carries that to the shelf. In this way all the play-things are put away and the class is ready for the next step.

By turning a reversible blackboard, on the side hitherto hid they find a new grouping of the words learned.

In the upper corner is a hastily executed outline drawing of a bird's nest in a tree with four eggs in it.

The rest of the space is filled with a written lesson, excepting half way down, where is another sketch of a box in which is a hen's nest that contains ten eggs.

Ten hands mutely urge the ten claims for reading the first line, but Mabel is the chosen one, who correctly reads—I see a nest.

A few rapid strokes of the crayon and Goldwin reads—A bird is on the nest.

Percy—The bird has four eggs in the nest.

Ernest—This is a hen's nest.

Fred—It has ten eggs in it.

Ada—Can you see the nest?

Now Alice, can you find a picture of a nest on the chart?

Alice—Yes, and here is the word, too.

Can you find any more of our new words on the chart, Ernest?

Ernest—I see eggs.

We'll read the lines from the chart, now, and one after another read.

This is my hen.

She is a black hen.

Nat's hen has a nest.

Can you see the nest?

This ends the lesson and the children are sent to their desks.

A few moments' work there results in pretty good drawings of this nest on the shelf and the word is fixed in their minds by a careful copy of the same from the blackboard, and not one of this class will fail to recognize this word to-morrow if it is shown him.

But what is done, meanwhile, with the other forty-two children in the room, do you wonder? For this is no imaginary school, but is one class out of the many in a primary school, that is so far as numbers go, far from being an ideal one—one, in fact, that from necessity is no exception to the rule of an over-crowded condition. About twenty of the children who are not reading, have had sufficient practice with the use of their pencils, by means of which they are able to write stories, and to-day they are writing about this nest. Of the other twenty, some are modeling nests with clay, using this one as a pattern; a few are coloring tiny eggs with brown chalk for these nests; some are cutting paper into fanciful designs by the aid of lines, which will be afterward pasted on cardboard for use in form and color lessons; some are selecting the shades and tints of brown from a quantity of zephyrs and strips of paper, while a few of the little ones are making pretty designs on their desks with shoe-pegs, or drawing the same on their slates.

Each and all are happy, for each is at work and enjoys the pleasure that comes only as the result of the discipline gained through intelligent labor.

COUNTY SCHOOL SUPERVISION.

Nearly every state in the Union recognizes in its system of public education the need and value of careful supervision of rural schools, and provides in its laws for the office of county superintendent; and those states that have made no provision for such supervision are from year to year realizing more clearly this weakness in their educational system. In a number of states much

of the best teaching is done in rural schools, and many of the most active, progressive and efficient superintendents are found among the county superintendents. There is far less machinery in the work of rural schools and more freedom than in the schools of our large cities, and consequently change and progress are more easily made. The county superintendent has far more liberty and independence in his work, is less hampered by public sentiment, by the conservatism, or "prehensility of tail," of teachers who belong to the unburied dead, and by the dictation of school boards, sensible of their importance and jealous of their authority, than the superintendent of a city or large town. In most states he has more legal authority than the superintendent of a city, and is not in the same degree regarded as merely the employe of those who put him into office.

The specific duties of the county superintendent vary in different states in as far as the details of his work are concerned, yet in all of them the essential features of his office are recognized. Whatever else the law may require him to do, it everywhere recognizes the fact that he is to supervise the work of the schools. Yet, strange as it may seem, superintendents in the past have not always realized this fact. In looking over their official reports we find that they apparently have spent more time in accurately noting how many miles they traveled and how many days they spent in their official work than in ascertaining the character of the teaching done, or in giving it proper direction. In some states where superintendents are paid by the day, this, of course, cannot be avoided; but in states where this is not the case, such gathering of meaningless facts, apparently for the purpose of showing "the amount of work done," indicates that the superintendent has failed to recognize the real, essential part of his work. The fact that he has traveled three thousand miles during the year in the discharge of his official duties means nothing by itself. Persons whose only occupation is to beg their bread from day to day could often make a better showing.

In every state where the office has been established, the law requires the county superintendent to furnish certain important statistics to the state department of public instruction, the collecting of which necessarily takes some time and labor; but it is a great mistake for him to look upon this part of his work as in any sense so important that he should allow it to absorb a very great deal of his time and attention. He is not primarily either a statistician, or a census agent, but a supervisor and director of the educational work of the county, and his "chief end" is not to make official reports, but to superintend schools. Like the teacher and the school house, he has been provided by law for the children of the schools, and not the children for him. The relative degree of importance he is to attach to the various official duties which the law imposes on him, is to be determined entirely by the effects they have on the educational interests of the children.

Viewed in this light the chief duties of the county superintendent are two: First, to examine applicants for licenses, and to protect the children from incompetent teachers by refusing to issue licenses to all such; secondly, to supervise and direct the work of the teachers whom he has licensed. A third duty, like unto these, yet subordinate to them, is that of educating public sentiment and arousing a general interest in the work of education among the patrons of the schools. The collecting of statistics and the making out of official reports are mere accidents of the office and should never be regarded or treated in any other light. Whilst this work must be done with care and accuracy, it should never occupy a large portion of the superintendent's time nor engross his interest.

In subsequent articles we shall speak more in detail of the work of examining teachers, inspecting schools, and the means and methods of advancing the educational work of the county in a general way. * * *

HAND AND EYE TRAINING.

(Continued from April number.)

HOME AND SCHOOL WORK.

KINDERGARTEN—HAND AND EYE WORK.

Paper pasting, cutting, and folding; stick weaving, stick laying, and pease work.

FIRST AND SECOND GRADES.

Collections of script exercises, number exercises and sets of letters.

OTHER GRADES.

School journals, or diaries, arithmetic and geography work, language work on common things, written descriptions of objects and pictures, sets of letters, business forms, United States history papers, accompanied by pictures of historical places; illustrated papers on physics and physiology; natural science papers; biographies of artists, poets and prose writers, accompanied by their

pictures; essays on Greek and Roman ruins, art and artists with pictures; written comparisons of plane figures and of solids.

HAND AND EYE WORK.

The following suggestive lists were prepared by teachers of the Cook County Normal School:

GEOGRAPHY AND HISTORY.

1. Dress dolls in typical dresses of all peoples.
2. Build miniature houses, tents, huts, etc., to represent homes of nations and tribes.
3. Make miniature ships, boats, gondolas, canoes, junks, etc.
4. Paint or make from paper the national flags.

(Copies are in the unabridged dictionaries.)

5. Make weapons of nations and tribes—ancient and modern.
6. A miniature walled city.
7. A canal with putty or wood banks, with a system of locks.

(Put in two or three canal boats.)

8. Plant seeds in different kinds of soil; also flax seed in a wet sponge; a sweet potato in a tumbler of water; sprout potatoes in a damp, dark place.
9. Make a collection of food, clothing and shelter productions; and of all important articles in commerce.
10. Model in clay fruits, vegetables, and geometrical forms; also hills, mountains, valleys, peninsulas, capes, plateaus, plains, etc.
11. Model battlefields—Bunker Hill, Gettysburg, Thermopylæ, etc.
12. Model the continents in relief in sand, clay or putty, and if possible cast them in plaster of Paris.
13. Paint maps showing the distribution of vegetation, animals, minerals, races of men, etc.
14. Make collections of pictures for teaching geography and history.

ART WORK.

Painting in oil.

Pen and ink drawing.

Pencil drawing by entire class to illustrate the study of

1. Form.
2. Botany.
3. Reading.
4. Language.
5. Arithmetic.
6. Geography.
7. Geology.
8. Physics.
9. History.

OBJECT PAINTING AND DRAWING.

Painting in water colors by entire class of

1. Plants.
2. Flowers.
3. Fruits.
4. Vegetables.
5. Cocoons.
6. Butterflies.
7. Miscellaneous.

Pencil or crayon drawing by entire class of the sphere, cube, cylinder, square and related forms. Sphere:

1. Croquet ball.
2. Base ball.
3. Globe.
4. Sugar bowl.
5. Tea kettle
6. Apple.
7. Orange.
8. Grapes, etc.

Cube:

1. Cubic inch.
2. Cubic foot.
3. Chalk box.
4. Lunch basket.
5. Wood box.
6. Wagon box.
7. House.
8. Barn.
9. Coal house.
10. Drygoods box.
11. Cook stove.
12. Bureau.
13. Book.
14. Valise.
15. Freight car.
16. Clock, etc.

Cylinder:

1. Dry and liquid measures.
2. Stove pipe.
3. Churn.
4. Pail.
5. Barrel.
6. Jug.
7. Jar.
8. Glass.
9. Tea cup.
10. Tin cup.
11. Trunk of tree.
12. Stump.
13. Fruit can.
14. Bottle.
15. Pitcher.
16. Ink bottle.
17. Flower pot.
18. Coal hod.
19. Umbrella
20. Boot.
21. Shoe, etc.

Square:

1. Picture frame.
2. Looking glass.
3. Door.
4. Window.
5. Blackboard.
6. Top of desk.
7. Side of house.
8. End of house.
9. Gate.
10. Panel of fence.
11. Ground plan of home.
12. Diagram of school yard.
13. Diagram of district, etc.

MECHANICAL WORK.

Kinds of work:

1. Scroll-saw work.
2. Wood carving.
3. Mechanical contrivances.
4. School apparatus.
5. Pasteboard models.
6. Clay models.
7. Units of measure in denominate numbers.

(Concluded next Month.)

SUPPLEMENTARY READING.

(Continued from March.)

FOURTH GRADE.

Barnes' Third Reader.
Sheldon's " "
Monroe's " "
Butler's " "
McGuffey's " "
Appleton's " "
Student's Series
Monroe's Advanced Third.

FOR GEOGRAPHY AND HISTORY.

History of the United States. Mrs. Pierson. Rutledge & Co., N. Y.

Aunt Martha's Corner Cupboard. T. Nelson, London.

Seven Little Sisters. Lee & Shepard.
Each and All. "
Stories of American History. "
Robinson Crusoe. "

FAIRY STORIES.

Adventures of a Brownie. Harpers, N. Y.

Six Popular Tales. Houghton, Mifflin & Co., Boston.

FOR TEACHER'S USE IN TEACHING GEOGRAPHY AND HISTORY.

Prang's Natural Series for Children.
What Darwin Saw.
Little Folks in Feathers and Fur. E. P. Dutton.
Zigzag Journeys.
Our Young Folks in Africa.

CORRESPONDENCE.

There is upon THE PRACTICAL TEACHER desk a large number of letters and notes containing questions and requests for advice. We regret that we have not the space to answer them all.

1. What is the least objectionable text-book upon arithmetic?

2. What is the best text-book for language lessons?

3. What text-book upon geography do you recommend?

4. What are the best books upon vocal music?

ANSWERS.

Warren Colburn's Arithmetic (Houghton, Mifflin & Co., Boston) stands first on my list.

The Franklin Primary Arithmetic (Wm. Ware & Co., Boston) is among the best, if not the best, primary arithmetic. Every teacher should have Grant's Arithmetic for Young Children (W. Small, Boston).

Milne's arithmetics are good. I cannot consistently recommend any arithmetic that contains rules, definitions and explanations.

2. Miss Stickney's Language Lessons (D. Appleton & Co.) are the best, most consistent and most suggestive text-books upon teaching language that I have ever seen. If you cannot use them as text-books study them carefully. Mrs. Heath's Language Lessons (Ginn & Heath) are also very helpful.

Powell's How to Talk and How to Write (Cowperthwaite & Co.) would be excellent, were it not for a few (to children) unintelligible definitions and rules mixed in like flies in a pot of ointment. Buy the books and use them, but leave out the rules and definitions.

Harper's Natural History Series of Language Lessons should be known and studied by all teachers.

3. Guyot's Common School Geography (Ivison, Blakeman & Taylor) is the best English text-book upon geography ever published; it has lately appeared in a new form, Shaw and Allen's Geography (Lippincott). Although but little known, it is crammed with most excellent suggestions. For teachers' books upon geography see articles upon "Structural Geography."

4. THE PRACTICAL TEACHER does not sing, because there was no Luther Mason nor Hosea E. Holt to teach him when he was a boy. These two men, with the immense help they are having from the Tonic Sol Fa Method, are fast revolutionizing the teaching of vocal music in this country. It is difficult to choose between them. Luther Mason gave the first and the best lesson in primary teaching I ever heard. Holt is worth his weight in solid gold, Bachellor, the champion of the Tonic Sol Fa, is not far off (no pun). So, my dear teacher, choose for yourself:

Mason's: publishers, Ginn & Heath.
Holt's books: Tufts & Holt, Boston.
Bachellor's: S. R. Winchell & Co., Boston.

5. What are the best works on the theory and practice of teaching?

In the June number of THE PRACTICAL TEACHER the list (carefully revised) of pedagogical works will be republished, with a list especially recommended.

A partial list of choice books is given as follows:

Payne's Lectures on the Science and Art of Teaching: Willard Small, Boston; E. L. Kellogg & Co., New York.

Tate's Philosophy of Education: C. W. Bardeen, Syracuse.

Johnnot's Principles and Practice of Teaching: Appleton & Co.

Page's Theory and Practice of Teaching: A. S. Barnes & Co.

Quick's Educational Reformers: Willard Small.

Fitch's Lectures upon Teaching. Soon to be republished by E. L. Kellogg & Co.

Laurie's Life of Comenius: Willard Small.

6. Which of the many varieties of text-books are best adapted to your system of teaching?

I have no peculiar system of teaching. I am, like you, merely learning to teach. I use all kinds of text-books, except spelling books. Some of the best I have given above.

7. What are the best books for Supplementary Reading?

See No. 7 of THE PRACTICAL TEACHER for First Reader reading. Miss Spear and Miss Thomas are hard at work preparing a list. This number contains a list for the fourth grade:

Alice in Wonderland; Through a Looking Glass: McMillan & Co., New York.

Each and All; Seven Little Sisters: Lee & Shepard, Boston.

Scribner's Introduction to Geography: Ivison, Blakeman & Taylor.

These are all excellent books for the fourth grade.

8. At a recent session of our institute the subject of False Syntax was discussed. Some of our teachers were opposed to giving the subject any attention than simply correcting the error made by the pupils. Others thought that when the pupils had arrived at the age of reflection, the subject should be given careful attention. I hope that you may be able to spare a moment of your valuable time to give us your views on the subject.

A little child uses very few idioms, and of these the incorrectly used forms are imitations of what he has heard at home or on the street. The only true way of changing these incorrect forms of expression is to allow them to fall into disuse, and, by arousing thought through observation, lead the child to use the right forms until the use becomes a habit. A common device is to collect all the incorrect English idioms from all English dialects and from all parts of our country, and, by using them in a book or writing them upon a blackboard, train children to correct them by rule and definition. Alas for the poor helpless children! They would never know how much grammatical depravity there is in the world were it not for the painstaking teacher who drags them through countless idiomatic sins. Goethe paints Mephistopheles as the spirit of negation, "Ich bin der Geist der Stet verneint." Teaching sins in order to avoid them is plainly a device of the devil. Always do the right and let the wrong severely alone, is the most important rule in all teaching. A great deal of evil in this world is brought about by systematically thinking of evil. Never let a child see a misspelled word. If he writes it himself, do not call attention to the mistake. Never allow him to use an incorrect expression if it is possible to prevent it. Above all, do not *teach* mistakes. Accidents will furnish plenty of examples.

"Should false syntax ever be systematically taught?"

There will come a time in the life of every pupil, if the preparatory work has been properly done, when the constructions and laws of the English language should be learned. I have never known that time to come until the high school is entered. I am sorry to say that very many grammar school graduates often need a long course in primary language lessons. If from the first, thought is made the aim of teaching, and expression the means of thought-development, if correct patterns are set, and correct language demanded, then there will be absolutely no false syntax to correct when pupils enter the high school. But if this is not done, what then? The plain course is to use in the main the same device used with little children, *i.e.*, the continual and persistent use of correct language, under the constant stimulus of thought. Will rules help at this stage of development? Yes, they will help at every step. The best rule is: *that is right.* Why is it right; why and when should we use "is" instead of "are" and "was" instead of "were"? Because one form is singular and the other plural. Why are "was" and "is" singular? Because they are, and there is no other answer, except, perhaps, to give the history of the words, showing how these forms of speech happened to be.

9. Will you kindly give me a few hints upon regulating whispering in an ungraded country school?

Give your pupils plenty of interesting work to do; good books to read and study, plenty of writing in the way of descriptions of objects which they are led by you to observe; give them leaves, plants and animals to draw or paint (painting is best at first); give them a great many practical problems to perform; take hold and study with your pupils.

10. Please recommend some good book that contains easy lessons in science.

Ginn & Heath publish some excellent books upon elementary science.

11. When do you think it best to begin with the shoulder movement in writing?

Just as soon as children begin to use the pen. I should not allow the finger movement.

12. How are you to prevent a child from misspelling a word the first time he has occasion to use it.

By carefully training him to recognize the fact that he *does not know a new word.* When a child asks for a word, give it to him upon the blackboard in your best handwriting.

13. What is the best book upon kindergarten work, and what upon primary methods?

Madame Kraus-Boelte's Kindergarten Guide (E. Steiger & Co., New York) is the best work published in English. Calkins' New Object Lessons (Harper Bros.) is an excellent work upon primary teaching. Of course you read Quincy's Methods (E. L. Kellogg & Co.), which gives illustrations of four grades of primary work.

MARKING PAPERS.

"Pupils learn to use the English language with force and beauty, not by memorizing the jargon of the grammars, but by writing it. To correct such work requires immense labor, and it is of the highest importance that this drudgery should bear the best results possible. My plan is as follows: We use large-sized paper: When ruled, the pupils write on every other line; when unruled, an equally wide spacing is required. The corrections are made by interlineation, this having been found more satisfactory than by margin. Pupils then make a *revised* copy. This brings the corrections home, and they see the force of the new words and phrasing. It is seldom that an egregious blunder is repeated, and the rapid acquisition of new forms of expression is very satisfactory indeed. To insure faithful work in making the revision, there is a subsequent interchange of papers, and the number of mistakes uncorrected is marked on the revision, without indicating where they occur. This requires more overhauling, and the negligent pupils are worked the hardest.

"JOHN E. J. BUCKEY, Frostburg, Md."

14. Through THE PRACTICAL TEACHER, kindly favor me with a syllabus of language lesson, suitable for children in ungraded schools, who read in the First, Second and Third Readers. Our readers are somewhat more difficult than those used in the U. S. A.

I will try and present such a syllabus in the June number of THE PRACTICAL TEACHER.

15. You are not in favor of studying others' methods. Would you advise the purchase and use of the new book, "Quincy Methods?"

Who are the publishers of "Seven Little Sisters"?

Please answer through the columns of THE PRACTICAL TEACHER.

FROM A SUBSCRIBER.

I am not in favor of studying others' methods!! Such a statement startles me, and I must look up at my book shelves to reassure myself. Study "Quincy Methods," "Oswego Methods," "Pestalozzi's Methods," "Froebel's Methods"—but above all, seek for the *principles* that underlie the methods.

Lee & Shepard publish "The Seven Little Sisters," and "Each and All."

16. In the April number of *The Teachers' Institute,* I had the pleasure of reading a lecture delivered by you in New York, on "What is Education"? This sentence was used, and I fail to get the thought. "In a good school it should never be necessary to give a language lesson?"

In a good school the development of thought is the motive of all teaching; expression, oral and written, is made a means of thinking; all subjects, reading, arithmetic, geography and history are used for this purpose; in every lesson thought is developed and expressed orally and in writing. What need is there for any more lessons in language, or for any distinctively language lessons.

17. I have a sum of money to spend for dictionaries and other reference books; please give me some advice in regard to the books I should buy?

Children should be trained to use dictionaries in the fourth and fifth grades. I prefer large unabridged dictionaries to small ones; in the latter definitions are often condensed into synonyms—often more difficult to understand than the words defined. Buy both Webster's and Worcester's, three or four for each schoolroom. Next in order should come "Lippincott's Gazetteer" and "Biographical Dictionary." A good encyclopædia is a very important item in a school. The new "Britannica" is the largest, and in many respects the best; Appleton's and Chambers' are excellent. Of course, I would have them all *if* I could get the money to buy them, but if I had a small sum of money, with my present experience I should buy Johnson's Encyclopædia. It is crammed full of reliable information.

THE PRACTICAL TEACHER.

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FRANCIS W. PARKER, EDITOR.

Honest investigation and a courageous application of the truth when found.

The fierce and effective onslaught of Supt. Harrington, of New Bedford; the calm but no less clear exposition of the evils of teaching grammar to children by Supt. Howland, of Chicago, command a halt to word-cram all along the line. These two well known veterans in the cause of education cannot be charged with youthful enthusiasm, lack of culture, or a desire for cheap notoriety. Both are learned, earnest, thoughtful, honest men, with long years of the best kind of practical experience behind them. Both are from Massachusetts, where they, as boys, lived under the power of the educational renaissance of Horace Mann. What will the Pre-Mannites say to their brave words? Surely the stock argument, that they do not know the schools, is not applicable to them. A few more such superintendents; a few more such courageously-uttered words, and out of the school-room doors will be swept much of the rubbish which ages have accumulated.

The motive of examinations, and not the examinations themselves, is the real point of attack. In fact, without examinations there can be no genuine progress. Every lesson, every bit of work done by the pupils, play on the school grounds, their bearing, intercourse with each other — in a word, all the elements of character should be continually and persistently examined. There should be oral examinations, written examinations, drawing examinations, manual-training examinations, and physical examinations. The teacher should examine to ascertain what and how much of character she has developed; the principal should examine to find out exactly the ability of his teachers; the superintendent should examine that he may judge whether his principals are fit for their positions; the board of education should examine in order to know whether its superintendent should be kept in office, and the people should carefully examine to settle the question whether they are paying their money for character-building or cram.

It is not examinations in themselves, but marking, that exercises such a terrible influence upon the children, an influence that has its greatest and most powerful outcome in selfishness, the cardinal sin of mankind. Mental and spiritual death is the inevitable result of making per cents the end and aim of school teaching.

Show me a school system where averages and per cents are the ruling passion and I will show you teachers who spend very little time in the study of child nature and child growth. Unconsciously the demon of selfishness dominates every action which has its end in a high average. Dull, weak-minded children, whose only hope of temporal salvation lies in careful, patient, persistent. loving culture, are driven to the wall, because their per cents are low, and the glory of the school is jeopardized.

In such schools the Master's hand never touches the lame, the halt, and the blind. Bright, ambitious, nervous boys and girls are kept up to the full bent of cultivating an almost useless power until brains and bodies give way, and death, insanity or hopeless invalidism ensues, while all that remains of their work is the glittering, useless bauble of a per cent. Fight on, Brother Harrington, the rickety, worm-eaten fortress is crumbling. For long years your loving heart has been filled with the cry of the children,

> "Your old earth is very dreary
> Our young feet are very weak."

Strike and spare not, your victory is a sure one.

When the acquisition of knowledge is the end and aim of all education, *marking* is a sad and stern necessity.

The ephemeral, effervescent nature of the knowledge (sic) gained, demands a mark so that the traveler may discover that at one time the tide reached such a height, or that the wind blew with such and such velocity.

Could we examine the tens of thousands who

have passed our graded schools with high marks, the result would be startling.

Ask them how many rules and definitions, how many sentences of the countless pages they have learned, remain in the memory for immediate use? I once asked a prominent business man of Chicago, who had received the best training in history the Boston schools afford, how much of English history he remembered, and he answered that he was not quite sure, but he thought he remembered one date and the name of one English king. It is generally admitted that the facts gained, vanish; but it is strenuously claimed that a certain mental power is acquired by the memorizing of words. It would be exceeding sad if something did not remain after passing through this barren wilderness of meaningless hieroglyphics.

Knowledge is not power in *itself*. Bacon never meant that it should be so considered. Knowledge is the only means by which we gain power; power to observe, power to investigate, power to reason, to imagine, to judge, power to express thought, power that is of use in every stage of life's journey. That knowledge which is the most practical in the broadest sense of this much abused word, is the best adapted to the acquisition of the highest power, and finally, that knowledge which imparts in its acquisition real genuine power lives as a vitalizing force in the memory forever.

Human character is the central point of the universe. No other work of God or monument of man carries in itself more prominent marks of life and power than the central point of God's design in creation — character. Any numerical symbol to mark character is entirely extraneous and unnecessary. Character marks itself. Think of the wife or husband carrying with them certain symbols in order to recall the character each of the other. The genuine teacher has but one motive, one aim, one purpose. All his energies, all his thoughts, all his power, all his skill are concentrated upon making each and all of his pupils better and better, hour by hour and year by year. That teaching and training which does not result directly and permanently in moral growth is infinitely worse than worthless. The true teacher leads and guides this growth with intense, never-wavering watchfulness. The slightest bad result is quickly noticed, the faintest moral outgrowth is hailed with a thrill of joy. What need of marking! What per cent is there low enough to recall a vicious tendency, what per cent high enough to indicate a heart-throb in the right direction? Marks make children sordid, because they represent sordid things. That which the teacher should strive for without limitation or reservation is far too high for scales to weigh, or line and rule to measure. Throw aside your per cent books, your cards that note the utterance of meaningless words that fall from the child's lips, and strive with your whole heart for the development of moral power. "Seek ye first the kingdom of God and His righteousness, and all these things shall be added unto you."

The pen falls, the bell tinkles, school is dismissed; the merry voices of the children die away in the distance, vacation is here and now cometh rest. I wonder if my readers long for the quiet shade, the grand old hills, the brook, and placid lakes, the surf of the never-resting ocean with a heart full of sweet anticipation that soothes and comforts the last days of a hard year's work. Such rest is a foretaste of Heaven.

Auf wiedersehen, my friends.

NUMBER AND ARITHMETIC.

VIII.

[The reader is referred to Number and Arithmetic in the February Number.]

IF YOU HAVE APPLIED THOROUGHLY IN TEACHING YOUR PUPILS THE PRINCIPLES involved in the directions already given, an excellent foundation will have been laid. Now continue the work in an all-sided manner. Apply number-thinking to all your work. Recognize the fact that numbering is an important element in all observation, investigation, reading and writing. If your motive is mental growth, you will gradually discover the elements of that growth,—that is, the elements of thought-power, and you will have them used whenever and wherever it is necessary to make the thought clearer by one or all of them.

YOUR PUPILS HAVE NOW ASSOCIATED ORAL AND WRITTEN LANGUAGE WITH ALL THE OPERATIONS in number to ten inclusive. Test their power, (1) by rapidly showing objects—separated, parted and united as suggested in the February number. Have them write upon the blackboard, upon their slates and their paper, what they see in the numbers; have them describe orally what they see; (2) give them combinations and separations, rapidly, without objects, and have them

write or tell the results; (3) give them, orally, problems involving the numbers taught, and have pupils write out the work, upon the blackboard, and upon slates and paper; (4) write a series of problems upon the blackboard, and have pupils solve them by writing upon the blackboard; (5) have them read problems from a book, and solve them as before; (6) write a number of sentences upon the board as

4 2s
10÷2
$\frac{1}{3}$ of 9
4+5

and have pupils write problems—one about each sentence; (7) have pupils write problems without the suggestions of sentences; (8) have pupils write in sentences all they can about a number; for instance about six:

3 2s=6	3+3=6
2 3s=6	4+2=6
6÷2=3	5+1=6
6÷3=2	6—1=5
$\frac{1}{2}$ of 6=3	6—2=4
$\frac{1}{3}$ of 6=2	6—3=3
1+5=6	6—4=2
2+4=6	6—5=1

It may be well to write the order of analysis on the board and have pupils follow it:

1. Find all the equal numbers that make the number.
2. Find all the equal numbers in the number.
3. Find all the equal parts of the number.
4. Find all the two numbers that will make the number.
5. Separate the number into all the two numbers, into which it can be separated.
6. Have pupils make the multiplication and division tables to ten inclusive.

FROM 9 TO 10 THE STEP IS VERY INTERESTING AND IMPORTANT, AS THE PUPIL ENTERS FROM 9 INTO THE WONDERS OF ARABIC NOTATION. That which recalled a single thing before is now to recall ten things. The devices for teaching notation are well known; the simplest and best is to lead pupils to associate the one in 10 with ten objects united so as to make the association easy. Bundles of sticks united in tens are a good means; dots or marks on the blackboard may be used. The steps should be gradual and simple, leading the pupils to comprehend at a glance that which sometimes seems mysterious, as "carrying," "borrowing" and "dividing." This can be done by associating, as I have said, the figures with that which they represent. Test pupils by writing numbers—12 sticks, for instance. Ask the pupils to show the value of the first figure (one ten), then the value of the second (two).

FROM 10 TO 20 INCLUSIVE. HOW TO TEACH A NEW NUMBER. The best test of teaching primary number is found in the way your pupils take up and master a new number. Ten has been taught; add one to ten and ask the pupils to analyze the number without the presence of objects. Analyze in the order given above. They will discover that equal numbers cannot be united to make eleven, that there is not a number of equal numbers without remainders in eleven, that it cannot be separated into equal parts. They will find that they can separate eleven into a number of twos of unequal numbers, and that these twos of separated numbers united make eleven. If the pupils cannot do this readily without objects, I think it is fair to say that the previous work has not been well done. In this case the only recourse is to take up objects again. *Have pupils discover every fact for themselves.* A fact discovered is half learned.

Twelve affords a better field for discovery than eleven. The analysis is as follows:

Numbers of equal numbers that make 12:

2 6s	3 4s
6 2s	4 3s

Numbers of equal numbers in 12:

12 ÷ 6	12 ÷ 4
12 ÷ 2	12 ÷ 3

Equal parts of 12:

$\frac{1}{6}$ of 12	$\frac{1}{4}$ of 12
$\frac{1}{2}$ of 12	$\frac{1}{3}$ of 12

Separation of 12 into twos of equal and unequal numbers:

12 — 1	12 — 7
12 — 2	12 — 8
12 — 3	12 — 9
12 — 4	12 — 10
12 — 5	12 — 11
12 — 6	

Union of twos of equal and unequal numbers that make 12:

11 + 1	5 + 7
10 + 2	4 + 8
9 + 3	3 + 9
8 + 4	2 + 10
7 + 5	1 + 11
6 + 6	

REMEMBER THAT THESE FACTS SHOULD BE LEARNED BY REPETITION IN PROBLEMS, SO THAT THEY CAN BE USED INSTANTLY BY THE SLIGHTEST EFFORT OF THE MIND.

This is the acquisition of one kind of freedom. The mind is freed from effort upon lower kinds of action, that it may concentrate upon higher. When you teach a number, FREE THE PUPIL FROM THAT NUMBER.

At the risk of much repetition, I wish to urge the use of every practical subject in numbers that comes within the number taught, and that which should come within the range of the pupil's experience. For instance, in teaching 12, use all the tables of weights and measures that come within 12; have weighing scales, measures of liquids, inch, foot and yard measures, linear, square and cubic; have money and a little shop for the sale of different articles; have pupils sell, write bills, keep accounts; have them loan money and calculate interest. In teaching form, color, botany, and all the sciences, let number always take its place as a *means of thinking*. Hearing problems is an excellent means of training this power to hear and understand oral language. Reading problems from the blackboard and textbooks is a good exercise in getting thought by means of written or printed words. Writing problems, and writing their solutions, writing accounts, bills and receipts is excellent training in penmanship, spelling, punctuation and language. Doing all this work properly enhances the power to think clearly. Isolation of subjects, one from the other, and each from all, is a tremendous extravagance of time and toil, and a terrible loss of mental power. *Seek for the unity of subjects as you would for a priceless treasure.*

TAKE UP ONE NUMBER AT A TIME SUCCESSIVELY FROM 10 TO 20. First analyze the number and then apply it in all possible directions. Teach the notation of each number by objects, so that the figures may have a fixed place-value in the minds of your pupils. Never allow any careless work, guessing in thinking, badly made figures, incorrect spelling, poor writing and punctuation. KEEP YOUR PUPILS ALWAYS UP TO THE VERY BEST THAT THEY CAN DO. Keep in your own mind the definite points you wish to gain. Move very slowly and surely. Gain freedom at every step; leave no entanglements behind you.

THE QUESTION IS VERY OFTEN AND VERY PERTINENTLY ASKED: WHY SHOULD WE SPEND SO MUCH TIME IN THE USE OF OBJECTS; WHY SHOULD WE SPEND TWO YEARS AND MORE UPON 20? I can but give the reason for the faith that is in me, and patiently wait for reasons that will lead me to something higher and better. At least one-fourth of all the time in our common schools is given to number and arithmetic; one-fourth of the time for eight and nine long years. If a perfect knowledge of arithmetic could be gained in that time, the price would by no means equal the gain, when compared with what might be gained in science, geography, history and literature. But what is really gained? To answer this question I must rely mainly upon my own experience of thirty years as a teacher, principal and superintendent. Compared with the vast amount of time spent, I have never yet found a class that could think well in the limitation of things by ones, that is, in arithmetic. What do I mean by thinking well? I will answer this by taking two points: first the verification of arithmetical sentences with objects. Take two sentences—$12 \div 4$, $\frac{1}{4}$ of 12. These idioms embrace at least three-fourths of all the work in arithmetic. Ask your pupils what these sentences mean, and the difference between them. Am I right in saying that pupils cannot think in numbers, if they cannot verify these sentences with objects? Take another· $12 - 7$. Ask pupils to show you with objects what this means. The second point is like unto the first: the power to solve problems in which there are new conditions. I once gave thirty-eight grammar classes, in the eighth and ninth grades, a simple problem in arithmetic. It was not a puzzle. All that was required in the solution of the problem was the power to see the conditions of simple objects and the relations of numbers. The classes were in several different towns and cities; the schools the best in the country. The problem was given orally, in detail, with great care, and the result was two per cent of correct answers in the thirty-eight classes. I have taught teachers and candidates for the profession of teaching for years; and I never cease to be astonished at the weakness of otherwise strong minds when they attempt to reason about numbers. I might add much more to these experiences. The results plainly show to me that there is a cruel, wicked waste of precious time. I may not present the best plan, or even a good plan, to remedy this terrible evil, *but it must be remedied, and that right early.* I say *must* in the name of humanity; in the name of millions of innocent children, because the proper teaching of arithmetic in the first and second grades *would save at least two-thirds of the time now given to that subject,* AND AT THE SAME TIME THE POWER TO THINK, THUS GAINED, WOULD BE IMMENSELY ENHANCED.

STRUCTURAL GEOGRAPHY.

III.

I closed my last article with the question, Can this great earth structure be built into the minds of children in the primary and grammar grades? I answer decidedly, yes, *if it can first be done by teachers.* Here lies the great difficulty. In my experience in teaching teachers, it is extremely difficult to shake off the conglomerated mass of unorganized facts called geography, and to enlarge the mental vision from the narrow limits of maps, to that which maps are made to represent. It is far easier to begin with pupils who have never studied "paper" geography at all, than with those who have a confused knowledge of isolated facts. Teachers who would teach the new geography successfully must generally begin all over again and slowly develop the power to imagine continent after continent until a concept of the earth's surface is acquired. I hope in this and following articles to be able to give teachers some assistance in the study of continental structures, and will begin by an analysis of the continents.

First.—The continent is to be considered as a great solid mass of earth rising above the ocean's level. The base of the solid is the extension of the plane of the ocean level from one ocean to another.

Second.—This upraised mass of earth is separated by the continental axis into two slopes, the one long and gradual slope, the other comparatively short and abrupt. The line of meeting of the upper edges of these two slopes is the continental axis, or great continental water parting. The lower edges of the two slopes meet, on either side, the ocean level. The lines formed by the meeting of the lower edges of the slopes and the ocean level form the greater part of the outline of the continent.

This analysis into long and short slopes is true of all continents.

Third.—On the long slopes of some continents the inclination is not continuous from the continental axis to the ocean. The long slopes are met by opposite slopes that come down from the axis of secondary masses of uplifted earth; these slopes have reverse slopes that extend from the secondary axis to the ocean. We have now some of the continents separated into two or more great masses of uplifted land,—one great mass and one relatively small mass. For want of better names, we may call the first the primary elevated mass the latter the secondary.

Fourth.—In South America the secondary mass of land is separated into two masses by the Amazon and in North America by the St. Lawrence.

Fifth.—The short slopes that extend from the continental axis to the ocean are also broken in many places by meeting slopes, as in Chili, California, India and Italy.

Sixth.—The next step in the analysis is to separate the masses of land into masses over a thousand feet and masses less than a thousand feet in height. This division line is nominal and arbitrary, that is, the lines of separation mark no natural division. The lands below the line may be classed as lowlands, plains or river valleys; the earth masses above the line are highlands. These highlands may be separated into three natural divisions—mountain systems, plateaus and terraces. The mountain system in turn may be separated into single, parallel and transverse ranges. The terraces form that part of the highlands which slope from the outer bases of single ranges or parallel ranges that inclose plateaus down to the limits of the highlands. These terraces in the long slopes of North and South America, are parts of the great central plain; in Asia and Europe they are broken by secondary ranges, like the Altai, Carpathian, Hartz and Thuringia, and inclose lower or secondary plateaus.

Seventh.—Two slopes, meeting at their lower edges, and a gradual inclination of the line of meeting, form the necessary conditions of a river basin. All the land of continents, with some slight exceptions, may be analyzed into river basins.

(*a*) The river basins upon long slopes that are at right angles with the continental axis, like the Amazon, St. Lawrence, Lena, Obi, and others.

(*b*) The river basins on the long slopes that, owing to the meeting slopes, are parallel or nearly so, with the continental axis, like the La Platte, Orinoco, Mississippi and Mackenzie.

(*c*) The river basins upon short slopes, some of which are at right angles with the continental axis, like the Columbia, Yukon, Yangtsekiang, Hoang Ho, Brahmapootra, Ganges; others, like the Sacramento and Joaquin, are parallel with the continental axis.

(*d*) The river basins on the reverse or ocean slopes of the secondary masses, like the San Francisca on the Brazilian slope, the Savannah, Roanoke and Potomac on the Atlantic slope of the Appalachian highlands.

(*e*) The basins of the Ural, Volga, Don and

Dnieper are at right angles with the continental axis; differing from all other river basins, they incline toward the continental axis.

(*f*) River basins that are parallel to the continental axis and are bounded by continental axes and the water partings of parallel ranges, like the Magdelena, Amoor and Danube.

Study the general structure of one continent, following the above plan. South America, on account of the simplicity of its structure, is the best continent to study first; follow this with North America; then compare the two structures. The order of comparison is the same as the order of analysis, or of going from wholes to parts, given above, with the new element of comparative heights, areas, outlines, and longitudinal and latitudinal distances. First, discover resemblances and then differences. Compare, *a*, solid with solid: *b*, long and shor slopes; *c*, primary and secondary elevated masses; *d*, highlands; *e*, mountain systems; *f*, plateaus; *g*. terraces; *h*, mountain ranges, *i*, river basins: (1) river basins on long slopes; (2) river basins on short slopes; (3) river basins on the ocean slopes of secondary masses; (4) areas, longitudinal and latitudinal distances, lengths of coast lines, average heights. Follow North America with Asia; compare the latter with North America; then compare the three continents; now study Europe; compare with Asia; then with North America; follow with South America; and then compare the four continents. Africa and Australia should now be studied. If this work is well done, you are ready for something like a scientific study of the globe. This may be done in the following order:

1. The position and arrangement of the continents upon the globe.
2. The oceans.
3. The relations of continents to the oceans—*a*, the long slopes meet what oceans? *b*, the short slopes?
4. Peninsulas.
5. Continental islands.
6. Oceanic islands.
7. Compare the oceans.
8. Compare lengths of coast lines with areas.

BOOKS FOR THE STUDY OF GEOGRAPHY.

Theory.

Guyot's Earth and Man.—Scribner.

Ritter's Comparative Geography.—Van Antwerp, Bragg & Co.

Man and Nature. Marsh.—Scribner.

Buckle's History of Civilization.—Scribner.

TEXT-BOOKS FOR STRUCTURAL GEOGRAPHY.

Guyot's Physical Geography.—Ivison, Blakeman, Taylor & Co. This is the best.

Guyot's Common School Geography.—Ivison, Blakeman, Taylor & Co.

Maury's Physical Geography.—University Publishing Company.

Houston's Physical Geography.—Eldredge & Brother.

Warren's Physical Geography.—Cowperthwait & Co.

Recluse's Earth.

The relief maps in Swinton's School Geography are excellent.—Ivison, Blakeman, Taylor & Co.

ELEMENTARY STRUCTURAL GEOGRAPHY.

Huxley's Physiography is the best.—Appleton.

Geike's Primer of Physical Geography. *Excellent.*—Appleton.

Kingley's Town Geology.—Appleton.

Shaler's First-book in Geology.—Ginn & Co.

Winchell's Geological Excursions.—S. C. Griggs & Co., Chicago.

Dana's Geological Story Briefly Told.—Ivison, Blakeman, Taylor & Co.

GRAMMAR AND EXAMINATIONS.

BY TWO VETERANS.

I.

GRAMMAR.

GEORGE HOWLAND, SUPERINTENDENT SCHOOLS, CHICAGO.

Of all the relics of the past that have been embalmed and sent down to us, there is nothing, seemingly, more worthless than routine parsing, "common noun, third person, singular number, neuter gender, objective case," year in and year out.

In the early primary grades, children learn the distinctions of common and proper nouns; person is hardly a property of nouns, or admitting the fact of person, volume after volume may be read without meeting any but the third; number is learned in the first grade, and as for gender, the English fortunately follows nature, and no child in the schools needs much instruction in this respect. No one would think of asking the youngest pupil whether *book* is a man or woman.

The formation of the possessive, too, has been learned, and that is about all of declension there is for nouns. The personal pronoun should be declined, but why continue to repeat, like an incan-

tation, that old round, "*nom.*, boy; *poss.*, boy's; *obj.*, boy; *ind.*, boy," to which half a dozen others might as well be added. It unlocks no hidden treasures.

In the study of some author for the nice expression of the thought and the true structure of the sentence, this commonly dry and barren subject may easily be made one of the most attractive and fruitful branches of school work. In many of our schools it has already become such, while the pupils at the same time obtain a more correct, because more appreciative, knowledge of the technique of the subject.

With so much of importance in the study, it does seem pitiful that the inquiring, eager spirit of our pupils should be quenched by this unmeaning, benumbing routine.

II.
EXAMINATIONS.

F. H. HARRINGTON, SUPERINTENDENT SCHOOLS, NEW BEDFORD, MASS.

That odious thing called CRAM is the progeny of test examinations. It has no other parentage. The noted Archdeacon Farrar, in a gush of indignant rhetoric against this vice, as displayed in the schools of England, has lately spoken of it as "the juggernaut car of Cram, before which the English nation is throwing its children by thousands, to have all the qualities crushed out before its ponderous wheels."

The archdeacon had better thunder his rhetoric against the cause instead of the effect. Strangle the parent and the deformed suckling will perish of itself. What do pupils cram for? Why stuff themselves with technical and superficial facts? What, but to pass the examinations with credit? Why, how well it is known among school experts, that hundreds of grammar-school masters systematically exchange with each other the lists of questions which, from time to time, are propounded by their several school committees and superintendents for the examinations, and paste those which they receive into scrap books; then their long-suffering pupils are put through the whole collection, and it is cram—cram—cram—until every unwonted form of question has been tried upon them, and its answers drilled into their memories, so that no novelty shall be sprung upon them when the next corresponding ordeal arrives! And where could be found an illustration of the influence of examinations more discreditable and damning than that!

OVER-PRESSURE is largely the result of test examinations, or of what is similar in character and effect—the average per cents from a competitive marking system. Over-pressure is twin brother to Cram. Wherever you find the latter you are pretty sure to find the former, keeping even pace with it hand in hand. But after all, it is not the abstract amount of study which a pupil accomplishes, even when the lessons have been severely tasking, which is the prime secret of injury to health, for it is yet to be proved that severe mental exertion, when made under healthful conditions, produces the slightest harm. It is the morbid anxieties, the jealous rivalries, the craving ambition, the restless uncertainty, which accompany study where rewards are at stake, that unhinge the nervous system of the pupil and make him an invalid. And the same thing is to be said of the effects of the competitive marking system, which is only a test examination taken in homœopathic doses, day by day.

Remove these giant evils, I pray you, gentlemen school committees, remove them at a stroke! Redeem the schools from the odium they now deserve, but need not! Do it by abolishing at once all test examinations—all the miserable marking system, also, if it prevail in your schools! Clear away these pests from the places they hold in your systems of instruction, as you would clear away foul accretions emitting mephitic vapors, from within and about the houses in which your schools are kept. Cling no longer to the baleful infatuation that you can measure first-class instruction as a grocer measures turnips in a bushel basket. You *can* measure lesson learning, but when lesson learning has been digested and assimilated, so that the product takes the crowning form of *culture*, it defies any basket measure to take it in. Set your teachers free; wholly free, that the play of their minds in their momentous work may be original and spontaneous.

It seems to be rather sorry mill-horse business for men of the calibre of most superintendents and supervisors, to be occupied from day to day with carrying on a round of test examinations and casting up per cents. They must often get wofully tired and wofully disgusted. Supervision of the proper kind is honorable and profitable, and it is needed everywhere. But where superintendents are compelled to ply the crank of perfunctory routine and grind out test per cents, it violates their self-respect and compromises the dignity of their office.

[The very common complaint, that those who criticise

our schools adversely do not know much about them, cannot be made of Superintendents Harrington and Howland. They are both men of broad culture and long experience in school work.—ED.]

EIGHT WEEKS IN PRINT.

BELLE THOMAS.

The little class whose first lesson in print was reported in the April number is before us again.

Each child has a McGuffey's Primer, open at page twenty.

Their attention is immediately directed by the teacher to the picture, "What is the matter with this old man?"

"He is blind," answers Roy.

"So he is; I will write the word that tells us what he is." As she slowly pronounces the word *blind*, she writes it upon the board.

"Here's the name of the little girl," pronouncing and writing the word *Mary* as she did the word "blind."

"That is my little sister's name," is Lucy's remark.

"Is it? I wonder if she is like this Mary in the picture, for she is k-i-n-d," writing it upon the board.

"Albert, what does Grace do with her book?"

"She looks at it."

"Yes, but Alice, what else does she do with it?"

"She holds it in her hand."

"Here is the word *holds*," she says, spelling and writing it.

"Who can read this story for me?" writes, *Mary holds a box in her hand.*

All the hands except Paul's come up.

"What is it, Paul?"

"I don't know that word," pointing to the word *holds*.

"Can you find it anywhere else on the board?"

Paul looks about for a moment, then finds it in the list where it was written the first time. As he places his finger upon it the teacher directs his attention to the box in Grace's hand. The sight of the box instantly recalls the forgotten word; turning back to the sentence, he reads without further hesitation.

"Now let us read from our books; who has the first story?"

Every eye is intent upon the first line; this is read through silently, then the faces as well as the hands indicate that they think they have the thought.

Frank is asked to read.

"Albert may read the next story; it is very short." Albert reads.

"Look at the next line and tell me what Mary does."

It seems to take a little longer to get the thought here, but soon the hands are eagerly raised.

"Paul may read."

He reads, *Mary holds him by the hand.*

"All look at the next story."

Maggie with her finger on the word *kind*, says she does not know it. Her attention is called to the same word on the board, the teacher asking at the same time, "What kind of a girl was Mary?"

Again Maggie looks at the sentence in her book, and soon is ready to read, *She is kind to the old blind man.*

"Now let us all read this lesson through quickly."

Maggie, Ellen and Roy are each called upon in turn; they read without hesitation.

The next lesson is a review of words previously learned, and is read without the help of script.

"Would you like to know the names of the little girls in this picture? You know one of them. Turn over the leaf and look for it."

Frank is the first to find *Ann*, and shows it to the teacher; very soon the others find it.

"Here is the other girl's name," slowly pronouncing and writing *Sue*. "Let us read the story and see if we can find out which is Sue."

"I know," says Grace.

"How do you know?"

Grace answers this question by looking up and telling the first sentence, *Sue has a doll.*

"What has the doll?"

Alice seems to be the last one to get the thought, so is asked to read.

The next sentence is longer than they are accustomed to, so is divided into two. These are read by two pupils, then a third is called upon to read the entire sentence.

The teacher, remembering Maggie's difficulty with the word *kind*, calls upon her to read the next, *Sue is kind to Ann.*

During the eight weeks since this class began with the print they have read 37 pages of Monroe's chart and 23 pages from McGuffey's primer. The script and print still go hand in hand, though the former has a less prominent place in each lesson.

In two tests of fifteen minutes each, made with this class a few days since, they read eighteen

pages from Barnes' First reader, twelve pages from Harvey's First reader and ten pages from Parker's Supplementary reader. In making this test no questions were asked about the pictures, no words written upon the board. The books were placed in their hands and they were asked to read. This they did without hesitation; they found four unfamiliar words, which were told by the teacher. Such tests, frequently given, are of great help to little readers; they give them confidence and bring before them familiar words in new relations.

This class as well as others in our primary grades, has been greatly helped by the home reading which they are encouraged to do. Each day at the close of school, twelve or fifteen books from the children's library are distributed; these are returned the next morning. But two requirements are made—that the books shall be carefully handled and that each one tell something of what he has read. A part of the time devoted to opening exercises is spent in finding out what they read. Very soon even the youngest and most timid reader is able to contribute something to this interesting and profitable exercise.

CLAY MODELING.

W. W. SPEER.

Felix Adler, in the *North American Review*, recommends clay modeling as a means of training children to observe; and in a circular sent out by U. S. Commissioner Eaton, the following may be found: "Modeling is drawing in clay. Any child who can copy an old shoe with pencil can make it with plastic material. More than this, it is easier to model anything than it is to draw it. A little boy can make a mud pie much better than he can copy it on paper. An old shoe, or a plaster cast of a rabbit, life size, forms a perfect model for imitation."

Adler and Eaton are practical school men, and their opinions are entitled to consideration.

The value of clay modeling in cultivating touch and sight can be judged by any one who will take a piece of potter's clay and undertake to mold a sphere, using only the tips of the fingers. Any effort to change the irregular mass into the form of a sphere brings into play the sense of sight and of touch. Your sense of sight discovers to you the elevations and depressions, shows you the lack of uniformity in the curve, and your mind directs what your hand shall do. In doing this work your hand becomes more dextrous and your sight more accurate. When it is more generally understood that the mind is, primarily, the product of sensation, that without sensation there can be no mind, more importance will be attached to giving direct attention to the cultivation of these senses. Touch and sight are of far more importance in intellectual training than hearing, yet the latter sense is the one usually relied on by teachers to produce impressions. When sight and touch are called into action you observe and think, while by hearing you are led to listen and remember. Observation and thought bring knowledge, habits of self-reliance and investigation, while listening and remembering, foster belief, imitation and dependence.

The closest attention that can be given to a form is to draw, or mold it. I venture to assert that if you have never drawn or molded an apple you have never observed one closely. If you doubt this, mold one and make a comparison with a real apple.

When a pupil has made a form he should be led to search for similar forms in the school-room, in the fields and at home. This exercise will tend to fix the habits of observation, comparison and classification. Passing from the forms made to like forms should be a part of each exercise. Recalling forms similar to the one the children are making, or have made, will bring into action the imagination and tend to give strength to the memory.

The purpose of the clay modeling is not to fit for art modeling or for any special calling, but it is to draw out the pupils' powers. This, I think, should be the aim of all hand and eye work fostered by the schools. If the teacher does not know, or loses sight of the purpose of this work, it may become as mind-killing as the mechanical work of repeating words and definitions not understood. I have observed that some persons who are somewhat timid in regard to encouraging hand and eye work, because they fear it will detract from the "mentality" of their schools, are the boldest advocates of the baldest kind of *mechanical* work. It is sometimes difficult to find anything but mechanical work in their schools. The faces of their pupils as they repeat memorized facts, rules and definitions, indicate about the same degree of interest and intellectual activity that the face of the town clock manifests when it tells the time of day.

If the mind is the product of sensation, then the eye, the ear, the touch, etc., are the windows through which the light comes to produce mind.

To try to secure the expression of that which has not entered through these avenues is a mistake. To urge a child to walk before he had sufficient strength would be unwise; to continue this work from day to day would result in producing a distorted form, a physical cripple. To urge pupils to attempt the expression of that which is dim and indistinct, of thought from vague ideas, produces a hesitating, stammering, stuttering habit of expression, which no after training can possibly cure. Before you require pupils to write or talk be sure that there is in their minds the basis for the thought to which you wish them to give expression. I do not mean by this that you are to *talk* impressions into their minds, but that you should set them to investigating, to observing, to thinking, before you require of them expression. To expect pupils to give expression without opportunity for observation is to expect something from nothing, an effect without a cause.

COUNTY SCHOOL SUPERVISION.

II

THE EXAMINATION OF TEACHERS.

Whether examinations are a power for good or for evil depends wholly on their character. The true aim and motive in education is the generation of power, knowledge being of value only as a means to this end. If the examination makes this the test of good work, it is an immense power for good; if it makes quantity of knowledge the chief test, it becomes an unmitigated curse.

What is true of examinations in general, is true of the examination of teachers in particular. The most important work of the superintendent is to train teachers in the science and art of teaching. This the superintendent of a town or city can accomplish through teachers' meetings, but the county superintendent, or commissioner, who has supervision of schools widely scattered, cannot do this, but can in a degree reach the same end through his annual teachers' examination.

Such an examination should have three things in view: First, it should above all things test, as far as an examination can test, the applicant's qualifications. Secondly, it should aim to stimulate and direct him in his further study. Thirdly, it should, as far as possible, direct his teaching.

A great deal has been said both in favor of and against examinations as tests, and perhaps with equal truth and justice. Whilst they can never be made absolutely accurate tests, they can be made approximately so, to a degree that will render them valuable and serviceable in educational work.

The examination should test *real* knowledge of the material to be used for purposes of education, —the subjects to be taught. To illustrate: An examination in geography should test the applicant's power to see in his imagination the various countries, islands, rivers, mountains, cities, etc., which he is to describe. To think of a map, marks on a map, and names, is a totally different thing from seeing in the imagination the thing which the map represents, and the examination that does not test this point is a sham and a farce. It should further test the applicant's ability to see in his imagination the general structure of the continents, their chief mountain ranges, plateaus and rivers, and his power to trace their effect on soil, climate, vegetation, and animal life. It should test his knowledge of the habits and social life of the different nations on the earth, the machinery of their government, their industries and commerce.

In history the examination should test the applicant's ability to picture in his imagination the social life of the past, and to trace the growth and solution of the various social and political problems of the different periods. Sketching the mere outlines of history, grimly called "skeleton," no more indicates an insight into a nation's life and character than naming the bones of the face proves a knowledge of a man's inner life. To get the physiognomy of a nation, as of an individual, the bones must be covered with flesh and blood. An examination should, therefore, test an applicant's knowledge of the finer details of history and his ability to discriminate between those that are significant and those that are meaningless. The mere mentioning of figures, called "dates," and of names, called "facts," committed solely for examination purposes, that still constitutes a large portion of many examinations, is, of course, but the rehearsal of meaningless rubbish.

The examination in grammar, or language, should, above all things, test the applicant's ability to express himself fluently and readily in good English; and next to that, his knowledge of the structure and laws of the language and his familiarity with its literature.

An examination in arithmetic should test his knowledge of number by requiring him to illustrate with objects the principal arithmetical processes, and his ability to see conditions and relations by requiring him to solve applied problems.

In the "Theory of Teaching," the examination

should be of such a character as to make the parrot-like repetition of "principles," committed from some book, impossible. It should test his knowledge of child-nature and his ability to give a reason for the principles and methods with which he may be familiar.

To test not only his knowledge, but more particularly his thinking power, the applicant should be required to develop topics rather than to answer questions, wherever this is practicable; and the examination should be, as far as possible, in writing. Whenever time will permit, a brief oral examination on each subject, after the written examination, is sometimes valuable, as it tests the applicant's command of oral language.

The quite common practice of attaching a certain per cent to each question is a pernicious one, converting, as it does, the examination into a mechanical performance and leading to gross injustice. It ignores the fact that the mere correctness of the answer is not the only thing to be taken into account, but that its clearness and logical statement are quite as essential; and that even mistakes in an examination are valuable tests of mental power. As you can tell whether a man is graceful or awkward not only by his walk but even by the manner in which he stumbles or falls, so you can tell a man's culture and power of thought not only by the correctness of his answers but even by the way he blunders through an examination.

The value of an examination in the way of stimulating teachers to study, and to study in right lines, may at first sight seem of less importance than it is. It might be thought that examinations as a matter of course must stimulate to study, no matter how they are conducted. So far from this being the case, it is a common complaint among teachers that they cannot do any real work in any profitable and interesting line of study, because it takes all the leisure time they have to prepare for the examination; by which is meant, memorizing dates, names and disconnected facts in history and geography; looking up the spelling of words that are used only for spelling purposes; committing rules of grammar and getting ready to parse, analyze and diagram the very soul out of a stanza of poetry, and to commit to memory the technical terms for the various parts of the mangled remains; refreshing the memory on the rules of arithmetic and the solution of well-known favorite puzzles of the superintendent; this is the "course of study' which many a teachers' examination virtually prescribes to teachers. Of what account is a familiarity with Paradise Lost, Hamlet, King Lear, Macbeth, Ivanhoe, The Vicar of Wakefield, and In Memoriam, in such an examination? It helps neither to diagram a sentence, to conjugate a verb, or to extract the cube root. Of what account is it to read books on natural history, on the elements of chemistry, or on ancient history? They do not tell you the boundaries of states, their capitals, their area, nor their population. A large number of teachers in rural districts rarely read any books other than the text-books on the branches in which they are annually examined, simply because the character of these examinations is such that they are not made to feel the need of general reading, but rather that their grade depends on a knowledge of insignificant facts and dates, and a readiness to solve puzzles and repeat exceptions to useless rules. Pedantry and conceit, instead of culture and scholarship, are the fruits of such examinations. Their tendency is to demoralize the intellectual habits of teachers.

One of the first questions in any teacher's examination should be, "What books have you read other than those on the subjects in which you are to be examined?" Then the character of the examination that is to follow should be such as to make the applicant feel that everything he thoroughly knows and from which he has gained genuine power and culture, receives credit in the examination. The questions on geography should be so framed as to give him an opportunity of showing what he knows of geology, botany, chemistry, physics and astronomy. The questions on United States history should call for what he knows of general history, and those on grammar and language should enable him to show his familiarity with literature, and arithmetic ought to be made the means of testing his general acquaintance with business and the laws of trade. All these things are of very great value to the teacher in teaching the so-called "common branches;" why should they be ignored in an examination?

In communities where teachers have been in the habit of committing their text-books for examination purposes and reading nothing beyond, such questions as we have above indicated would, of course, remain unanswered the first year; but they would indicate a line of profitable study for the coming year and would be a strong stimulus to wider reading and broader culture.

The examination should aim to direct the teaching. It would seem at first as if this were impossible, but any superintendent who has observed the influence of his examinations of teachers on the teaching in the schools, knows that he,

to a large extent, directs the teaching when he examines the teacher. What he emphasizes in the examination will receive special attention in the schools, whatever he slights in his examination will be slighted afterward by the teacher. "Whatever I want introduced into the schools I put into the examination," is a common sentiment among thoughtful superintendents of wide experience.

Let any superintendent who is skeptical on this point make the following experiment: If his teachers have been wasting precious time in trying to teach children to "parse and analyze," to the neglect of practical training in the use of language, let him take a first reader along to his examination, and instead of giving the class sentences for analysis and parsing, let him read to them a lesson from this reader, and request them to write it, sentence by sentence, as he dictates it, capitalizing and punctuating it correctly as they go. Let him take a picture along, even if it be only some cheap chromo, hang it up in the room and request the class to take fifteen minutes to write a description of it. Let him tell them that this, along with their manuscripts on other subjects, is to be their test in "grammar" and spelling. Then when he visits or inspects the schools, let him take a few minutes to test the pupils on "grammar," by giving them a similar exercise, and the results will show that he has accomplished more in the way of reforming poor teaching by one teacher's examination than by several years' work in the way of giving teachers "suggestions" and "instructions" with reference to it. As long as the character of the annual examination encourages sham work, all the "suggestions" the superintendent may give will receive little heed.

If in arithmetic the work in the primary classes has been a mere work with figures, let a good part of the examination be devoted to concrete work in the way of illustrating the "four fundamental rules," as applied to whole numbers and fractions. If applicants can illustrate with objects all the processes involved in problems like the following, they can do more than ninety per cent of all the teachers that are annually examined for licenses: $3+4=?$, $16-9=?$, $5\times3=?$, $8\div2=?$, $\frac{1}{2}$ of $8=?$, $\frac{1}{2}+\frac{2}{3}+\frac{3}{4}=?$, $\frac{1}{3}$ of $\frac{2}{5}=?$, $\frac{5}{6}-\frac{1}{3}=?$, $\frac{3}{4}\div\frac{2}{3}=?$, $2\times2\times2=?$. If they succeed in doing the above, let them also try to show with objects the meaning of such expressions as the following: $3\div5=?$, $\frac{1}{2}\div\frac{2}{3}=?$, $\frac{3}{4}\div3=?$, $\frac{2}{3}\times\frac{3}{5}=?$, $\frac{1}{2}=?$, $8\div2+3=?$ The probability is that this will at first sight seem very easy work to the class, and possibly it may even appear so to the superintendent, but an honest effort to do it will soon convince both that cube root, alligation, compound proportion, and all other "hateful things" in arithmetic, would be less puzzling than these apparently simple problems. A few such examinations would stimulate teachers more in the direction of studying "methods" of teaching primary arithmetic, and would create a greater change in the teaching than all the "criticisms" and "suggestions" the superintendent might give when he inspects the schools. ***

METHODS IN TEACHING MUSIC.

BY H. E. HOLT.

The elements upon which the profound science of music is based are in themselves *very simple,* and can be readily acquired by the youngest pupils in our public schools. The analytic method in objective teaching requires a unit of thought for presentation to the mind. In training the mind to think in music two units of thought are necessary from which to work, viz., that of *tune* and of *time,* and before we can sing intelligently we must gain a *practical knowledge* of these two units upon which all music is constructed. We have failed in teaching this subject because we have not recognized these units in the elements of music and have not presented them in their simplicity to the mind. The unit of *tune* is the major scale, and by practice with this series of eight sounds can be acquired the ability to sing all intervals of which music is composed. Skill on the part of the teacher in giving practice upon the major scale is the keynote of success in gaining a knowledge of the pitch of sounds, and no time in the whole school life is more favorable to development in this direction than the lowest class in the primary school. The unit of "time" in music is the measure, or group of accents.

LANGUAGE TEACHING.

R. C. METCALF, SUPERVISOR OF BOSTON SCHOOLS.

V.

LETTER-WRITING.

Another branch of language should receive considerable attention, even in the primary school. Little children should be taught to write letters. It is a mistake to suppose that any well educated person will drift into letter-writing and become a proficient in the art if he only has practice enough. Practice is necessary, it is true, but

"practice will *not* make perfect" unless the effort be directed by sound judgment.

Leaving the form of the letter to be determined by the dictation lessons, as described in a previous paper, I will now speak only of the matter that is to enter into its construction.

With young children, assume certain conditions and require the pupils to answer them in the proposed letter. At first one condition will be sufficient; then two, and afterward more.

For example, ask the children to write a letter inviting you to spend next Saturday afternoon with them, at their homes. The second letter should contain the above, or something similar, and the additional particular that their mothers wished them to extend the invitation to the teacher. The third letter adds an invitation to "tea," and, perhaps, to spend the evening. Thus the letter can be made to *grow* day by day until it reaches proportions of considerable magnitude.

With children in the grammar school, the following, or something similar, may prove helpful:

1. John Wilson lives in Dorchester. Warren Johnson lives in South Boston. John has made a kite and is quite proud of his success. He writes a letter to Warren telling him about the kite and asking him to come to Dorchester the next holiday, and enjoy the sport of flying it.

a. Write John's letter. *b.* Write Warren's answer.

2. Willie Jackson lives in Salem. Last July he spent three weeks in Boston with his cousin George Williams. Willie and George visited the skating-rink several times and enjoyed the skating very much. After his return to Salem, Willie's mother consented to buy him a pair of roller skates, but none could be found to suit. Willie wanted a pair like those he had seen in Boston. Accordingly he wrote to his cousin George stating his troubles and asking him to buy a pair of skates and send them by express to Salem, giving the street and number of his house. The money was to be sent on receipt of the skates.

a. Write Willie's letter, stating *all* of the facts mentioned above.

3. Annie Jones lives at 28 Bremen street, New York. She is nearly fourteen years old and attends the public school. Her mother proposes to give her a birthday party on the evening of the 28th of May. Annie has decided to invite twelve of her schoolmates to the party and anticipates a "lovely" time.

a. Write her note of invitation to Sarah Wilkins, one of the invited guests.

b. The night of the party proved to be rainy and all of the guests were obliged to ride. The party, however, proved a great success. The games were greatly enjoyed and all of the little girls were very sorry when the carriages arrived, at ten o'clock, to take them home.

Write Sarah Wilkins' letter to her aunt Sophia, who lives in Boston, telling her all about the party. The letter is to be dated May 30.

The above *conditions* for letters are to be written upon the blackboard by the teacher before the letter-writing begins. The *conditions*, of course, must be adapted to the age and capacity of the pupil. They should be prepared carefully and the pupils should be trained to answer *all* of them.

Such training is very valuable in preparing pupils for business correspondence.

The following plan may be used for the sake of variety, and by some teachers is preferred to the one already outlined:

When the children are all ready for the work, slates clean, pencils well pointed, and attention fixed on the teacher, they are told that, to-day we will write a letter to cousin Joe, who lives in Chicago. Now who will suggest something to write about? One pupil suggests the "school," another "the circus that paraded the streets a week ago and is now encamped on Melbourne Park;" another "the trained horses on exhibition at the 'Windsor';" another, "the last holiday and what we did," etc. When suggestions enough have been made, the teacher calls attention to the fact that, if treated in the order given, the letter would not be well arranged. The children now examine the "items" and decide which one should come first, which one second, and so on through the list. After the rearrangement has been made on the board and the items numbered, the pupils should have a quiet half hour for the writing.

To assist in paragraphing, require them to put into one paragraph all that they say upon one subject. If there are four "suggestions" on the board, there should be four paragraphs in the letter. This simple rule for dividing the composition will suffice until the pupils are old enough to understand all the mysteries of paragraphing.

Whether my pupil be destined for the army, the church, or the bar, matters little to me. Before he can think of adopting the vocation of his parents, nature calls upon him to be a man. How to live is the business I wish to teach him.—ROUSSEAU.

QUALITY OF VOICE.

FRANK STUART PARKER.

The mechanism of speech may be likened to an air gun, the vowel representing the bullet or carrying power; the consonant the compressed air, or the impelling power. To bring to the maximum the impelling force, prompt, vigorous action of the organs of articulation must be secured. The chief characteristic of a consonant is its obstructiveness, two organs of articulation come in contact, preventing the free passage of voice or breath, the air in the cavities back of the obstruction is compressed and its escape produces that quality of sound known as a consonant. Strength of contact and quickness of recoil in the action of the organs of articulation are the two points to be worked for. Lazy action produces that sloppy indistinctness common to invalids, persons lacking in energy, and drunkards whose muscles are not under the control of the will. Lack of promptness in relinquishing the positions assumed while molding the consonant, carried to the extreme, results in stuttering; in a less pronounced form in an over pedantic distinctness, a common affectation among teachers, who wish to be exceedingly-particular-and-have-every-word-correct. This should be guarded against. In the action of the body, perfect grace is only attained when an action is performed with precision and ease. When attention is called to the process, or effort in any way is suggested, it is tiresome to the beholder and expensive to the individual. The over energy expended in one process is so much loss of power, indeed, the strongest argument in favor of the cultivation of grace of body, correct use of voice, and the organs of speech is, that an awkward movement means an undue expenditure of vital energy. We are too apt to view these matters from the æsthetic standpoint alone, forgetting that that which pertains to man's two principal means of expression must be, of necessity, of the highest importance and thoroughly practical.

Exercises to be used in connection with vocal chart for improving the consonant element:

1. Take the representative consonants p, f, t, l, k, assume the positions forcibly and silently in succession, retaining each for a second or more, then suddenly relinquish. Be sure that this action is purely local and that there is no accompanying action of the diaphragm. The natural tendency is, when one set of muscles act vigorously, for the other muscles to follow suit and vice versa. The greatest degree of perfection is obtained when the muscles act independently, or collectively at will. The frequent scraping of the throat when speaking loudly, or the inability to be heard in the quiet use of the voice, will emphasize the benefit to be derived from this independent action on the part of the muscles.

In the expression of grief, sympathy, tenderness or despair, the projection of the tone depends largely upon the distinctness and vigor with which the organs of articulation perform their work. It is safe to affirm that with clear enunciation and the ability to place the voice, at will, at the front of the mouth, the problem of being heard in the largest hall is solved. Be very careful in all practice with the consonants that the posterior pillars of the soft palate are not contracted. In all practice where force is required, the great danger lies in this tendency to contract the wrong muscles, a tendency which is not only an extravagant expenditure of force, but the prolific source of two-thirds of the bad voices in America.

2. Give the consonants (p, f, t, l, k) with active whisper. Be careful in this exercise to leave the throat free. Any scraping, uncomfortable feeling in the throat resulting from the exercise will denote contraction of the wrong muscles, and is to be avoided.

Imagine that the tone is produced at the front of the mouth, drop the head lifelessly from side to side, forward and back, while practicing this exercise.

3. Give the consonants with vowels explosively:

Pa, fa, ta, la, ka,
peer, feer, teer, leer, keer,
pair, fair, tair, lair, kair,
poor, foor, toor, loor, koor,
pore, fore, tore, lore, kore.

This gives practice with different vowels, some of which are more difficult to project, owing to their tendency to slip back in the mouth.

4. Repeat the consonants b, d, g, v, twice. Use care in the practice of this exercise. Do not give with regularity to children under sixteen years of age.

DR. GUILMETTE'S VOCAL EXERCISES.

Classification and permutation of the organic, labial, lingual, and laryngeal articulations:

I.—*Organic Labial Articulations.*

Labial proper, P—P; semi-labial, F—F.

II.—*Organic Lingual Articulations.*

Apex of the tongue straight, T—L, hard; apex of the tongue curved, L—L, soft; dorsum of the tongue arched, K—K, hard; apex of the tongue

straight, R—R, hard vibratory; apex of the tongue curved, R—R, soft vibratory.

III.—*Organic Laryngeal Articulations.*

B—B; G—G; D—D; V—V.

N. B.—1. The principal laryngeal sound represented by the character B should, for the purpose of enlarging the chamber of the larynx, be practiced *forcibly* several times a day, regardless of the grammatical *name* which designates it as a consonant.

2. Prefix the articulation of each of the above consonants to the closed organic vowel *I*, taking care to keep passive those vocal organs whose immediate functioning is not required. Let the *mind* be very vigilant over the active organ and none other, taking care to retain it for a second or more in its position, after the articulation shall have been given.

3. The same rule should be strictly observed in the molding of the organic *vowel* sounds. Otherwise, the slurring and drawling of the vocal *element* will be the result, and a miserably defined vowel will characterize the performance of the singer or speaker.

EXERCISES ON THE PERMUTATIONS OF THE LABIALS, LINGUALS, AND LARYNGEALS.

1.—The twenty-four permutations of the Linguals t l k r:

t l k r	t k l r	t r l k
t l r k	t k r l	t r k l
k r t l	r k t l	l k t r
k r l t	r k l t	l k r t
l t k r	k t l r	r t l k
l t r k	k t r l	r t k l
l r t k	k l t r	r l t k
l r k t	k l r t	r l k t

2.—The twenty-four permutations of the Labials p and f, with the Laryngeals b and g:

p f b g	p b f g	p g f b
p f g b	p b g f	p g b f
b g p f	g b p f	f b p g
b g f p	g b f p	f b g p
f p b g	b p f g	g p f b
f p g b	b p g f	g p b e
f g p b	b f p g	g f p b
f g b p	b f g p	g f b p

3.—The twenty-four permutations of the principal Labial p with the two principal Linguals t and k and the principal Laryngeal b:

p t k b	p k t b	p b t k
p t b k	p k b t	p b k t
k b p t	b k p t	t k p b
k b t p	b k t b	t k b p
t p k b	k p t b	b p t k
t p b k	k p b t	b p k t
t b p k	k t p b	b t p k
t b k p	k t b p	b t k p

It will be understood that the exercises so far given have been for the purpose of improving the articulation alone.

Articulation refers to the process of cutting out or molding the voice into separate element; pronounciation is the combining of the elements into syllables and words; accentuation is the discrimination of one or more syllables through a variation of pitch. The first two processes come under the head of quality, the third under that of pitch.

Of course, teachers will understand that these exercises are to be given only where they are needed for any slovenly or imperfect action of the organs of articulation. Call as little attention as possible to a child having these defects, as it only makes him more self-conscious, and intensifies the fault. Give him a good model and rather inspire him to do what you can do than to feel that he needs to do it. "I can do this, see if you can," is the effective argument of the play-ground and should be that of the school-room with younger children.

Make children of an older growth as wretched and conscious as you please of a defect, if, at the same time, you plainly point out the remedy, but with young children lead them to do that which will overcome a defect without making them over-conscious of the defect

HAND AND EYE TRAINING.

(*Concluded from May Number.*)

Names of things that can be made:

1. Bracket.
2. Paper holder.
3. Card baskets.
4. Easel.
5. Stands.
6. Picture frame.
7. Book shelves.
8. Frames for foot rests.
9. Box.
10. Rake.
11. Hoe.
12. Pitchfork.
13. Harrow.
14. Plow.
15. Hammer.
16. Harness.
17. Wagon.
18. Cart.
19. Wheelbarrow.
20. Sled.
21. Scales.
22. Steam-engine.
23. Horseshoe.
24. House.
25. Chair.
26. Bedstead.
27. Cradle.

28. Bureau.
29. Table.
30. School desk.
31. Ladder.
32. Knife.
33. Fork.
34. Spoon.
35. Baby cab.
36. Balances.
37. Apparatus for showing the expansion of iron, etc.
38. Apparatus for showing motion of air caused by heat.
39. Pile-driver.
40. Set of levers.
41. Apparatus for showing expansion of liquids and gases.
42. Pumps.
43. Water wheels.
44. Siphon.
45. Blocks for metric measurement.
46. Pulleys.
47. Wheel and axle.
48. Hydrometers.
49. Sets of grain weights.
50. Apparatus for showing that liquids seek their level.
51. Barometer.
52. Apparatus for proving Mariotte's law.

Measures:

1. The foot.
2. Two feet.
3. Three feet, etc.
4. A surface, one foot in each dimension.
5. One foot by two feet
6. One foot by three feet.
7. Two feet by two feet, etc.
8. An inch cube.
9. A two inch cube.
10. A three inch cube.
11. A cubic foot, etc.

KNITTING AND CROCHETING.

1. Mittens.
2. Stockings.
3. Hoods.
4. Caps.
5. Scarfs.
6. Mats.
7. Tidies.
8. Wristlets.
9. Shawls.
10. Slippers.
11. Trimmings.
12. Carriage Afghan.

PLAIN SEWING.

1. Aprons.
2. Collars and Cuffs.
3. Patchwork.
4. Hemming napkins, handkerchiefs, etc.
5. Pillow shams.
6. Bed spread.
7. Cushions.
8. Button holes.
9. Calico wrappers.
10. Sweeping caps.
11. Dolls' clothes.
12. Darning.

FANCY WORK.

Many of the articles can be made of canvas worked with wool, of felts embroidered in silk or wool, of pasteboard covered with satin or velvet, painted or embroidered, of bright colored cambrics covered with mull or lace, as taste may suggest.

1. Lambrequins.
2. Table Covers.
3. Bureau Covers.
4. Splashers, etc.
5. Whisk broom holders, cloth or cardboard can be used.
6. Embroidered towels, doilies.
7. Rugs, braided or worked on canvas.
8. Toilet boxes.
9. Covers for bottles.
10. Canvas shawl strap.
11. Work baskets.
12. Emery bag.
13. School portfolio.
14. Penwipers.
15. Slipper case.
16. Cover for foot rest.
17. Waste-basket.
18. Screens.
19. Banners.
20. Applique work.
21. Designs for braiding.
22. Designs for wall paper.
23. Hand painted ribbons.
24. Fancy neck wear.

COLLECTIONS.

1. Minerals.
2. Botanical specimens.
3. Woods.
4. Stamps.
5. Cards.
6. Pictures.
7. Coins.
8. Miscellaneous.

LETTERS FROM GERMANY.

II.

GERMAN TEACHERS.

L. SEELEY.

Some may wonder why teaching is not selected upon its merits by a greater number of young men in America as a fixed, permanent profession. Many teach simply as a "stepping-stone" to something else, and they leave teaching as soon as circumstances admit. Others enter upon teaching and continue, not because they love the work and choose to follow it for life, but because they are unable to find other employment. In a word, the great majority of American schools are taught by teachers who have not selected this deliberately as their chosen life work, and who follow it not from choice. The reason why this is the fact is, the inducements offered are insufficient. It may be urged that the love for humanity should inspire men to devote themselves to this calling; but we must take the world as we find it and consider men as mundane creatures. The first question that naturally arises in connection with a vocation is, What kind of a living does it afford? This is

true from the most sacred calling to the most menial, and it is perfectly right.

In Germany the teacher's profession attracts the very best talent, and there are always numbers of young men ready to fit themselves for teachers sufficient to meet the demand. Many believe that the condition of teachers is far less favorable in Germany than in America. I do not think so, and shall endeavor to show why. In the discussion of a few questions in connection with the German system, I shall endeavor to suggest an answer to the problem indicated at the beginning of this article

TEACHERS' SALARIES.

In Germany, as in America, the amount of salary depends upon circumstances: such as sex, amount of experience, character of the position, locality, etc. Some provinces pay more than others, large cities more than country districts. A German teacher begins with a salary of from two to four hundred dollars per annum, and receives an increase from time to time until it amounts to from five to eight hundred dollars for ordinary teachers, and from seven to twelve hundred dollars for principals and directors. But few reach a salary of twelve hundred dollars. Perhaps one-tenth of the teachers are females, who receive about seventy-five per cent as much as the male teachers in corresponding places, but who seldom get a place paying four hundred dollars. Women are employed in the five lower classes in girls' schools, and in the two lower classes in boys' schools, in some parts of Germany, but this is by no means general. They are always employed to give *Handarbeit* lessons (knitting, sewing, fancy work, etc.) to girls. In Prussia the tendency is to increase the number of female teachers, and many young ladies are fitting themselves to meet the rigid examinations of the government. This increase is looked upon with some coldness by the male teachers as an innovation, and because there are thousands of young men who stand ready to enter the lists as teachers, should there be openings to warrant it. But there are thousands of young women too, and why should the door to this vocation, for which they are so eminently fitted by nature, be closed to them! These times are pregnant with universal advancement, and one of the surest indications of it is the increased respect accorded to woman.

From an American standpoint the sums mentioned are very small, but the value of money lies in its purchasing power, and the adequateness of a salary is fairly estimated by its sufficiency to meet the wants of the society in which one moves. Measured by these standards, the salary of the German teacher is fully equal to that of the average American teacher. It is a settled principle of commercial transactions that the more uncertain and unsafe the investment, the higher the ratio of profit expected, while the more stable and secure the investment, the lower the rate. Men invest more readily in United States securities at three per cent than in a powder mill at twenty per cent profit. Apply this principle to the question before us. When a German teacher has passed the required examinations and is admitted to the full rank of teacher, he is assured a life position. He is thus sure of his living and can afford to accept a smaller salary than if subjected to the expense of frequent change, and to the uncertainty of future, congenial, suitable employment. He can form pleasant relations, secure a home, lay his plans like other men, and feel that he has a place on God's footstool where he can plant his own vine and sit in the shade of his own fig tree. So, while the amount of salary is small, the teacher is comfortably situated, in many cases acquiring property and making for himself a home.

GERMAN PENSION SYSTEM.

Besides caring for their present wants, the government pensions its worn-out teachers and their families. The German government acts on the principle that the teacher is an officer who has served his country, and when he is no longer fitted for service, it is incumbent upon the state to care for him. The chief points of the pension system are as follows: After ten years' service each teacher is entitled to a pension equal to one quarter of his salary at that time, should he be obliged to discontinue. To this $\frac{1}{4}$ ($\frac{20}{80}$) $\frac{1}{80}$ is added for each year's service thereafter. Thus if after ten years he continue yet thirty years, he adds $\frac{30}{80}$ to his $\frac{1}{4}$, making $\frac{50}{80}$ or $\frac{5}{8}$ of his salary at the end. Should his salary be $800, he can retire on an annual income of $500.

Besides this there are private pension associations among the teachers. It often occurs that the income from these accumulated pensions is greater than the salary while actively engaged in teaching.

Thus when a young man has become a teacher he is encouraged to continue, because his salary increases from year to year; thus recognizing the value of experience; 2. His pension increases year by year; 3. He has a permanent place as long as he lives; 4. He is held in high respect by all;

5. He has a field of real usefulness where he can devote himself with definite purpose to reach certain ends and then see the fruits of his labors.

If America would attract her best talent to the most important field of teaching, she must hold out some such inducements as the German system gives its teachers.

ANSWERS TO CORRESPONDENTS.

DEAR SIR,—Knowing your earnest desire to help teachers who are on the right side, I will ask you to please give me a reply to the following questions, either by letter, or by replying through the columns of THE PRACTICAL TEACHER, for which I send $2 for one year's subscription for myself and —— of this place.

1. How long after a child of six years of age enters school, before you would present objects, and how many new words, at each lesson after the first four or five have been taught?

2. How long ought it to take a child of this age to write a sentence so that you can read it?

3. Is it a good plan to have pupils copy words from their reading lessons, and then spell them orally from their slates?

4. What is the best course to pursue with a boy who cannot talk plainly or articulate distinctly?

5. What would you do if you had no charts, and but one small blackboard to work with; where the board, or trustees, would not furnish them? How can one keep the pupils busy, at their seats, especially those who cannot write much? How often ought such pupils to recite, and how long ought each recitation to be?

6. What would you do with a boy who could gallop over every page in the first reader, and could not write?

7. What would you do where the people denounced the method, and were so prejudiced that they would not visit the school after being solicited to come often?

8. Ought pupils to do nothing in writing but copy script from the blackboard the first year.

9. What would you do when the pupils come to the class with their slates full of their own work; hear them read and spell it, or hear them read from their readers?

10. I began with a class of small boys last winter six years old who have never seen a spelling book, and took them through the first reader; do you think that advancing too fast, for a term of six months?

If you will reply to the above questions I will feel greatly obliged. I have been trying to follow the principles of your methods here to the best of my ability for the past eight months; have a school of thirty pupils at this time, but am laboring in the midst of opposition and persecution, so much so that the people of the town elected a board last week who are opposed to the system; also this county elected a man for county superintendent who says that he will see to it that the spelling book is restored to the schools here, and all over the county.

We have a great many good people on our side, but we need help badly at this time. The superintendent elect said that he could not indorse any of your work or methods; so you will see that tradition is about to overwhelm us; also most of the teachers of this county are against us. Do you think any teacher can be successful in introducing the spelling book here after the children have been instructed by the new way for eight months or more?

I publish the above letter in full, because it shows at a glance the position of thousands of teachers who are struggling to do better work in the face of great opposition.

1. I should begin with objects as soon as the child enters school, and use them until the child can think better without the presence of the objects than with them. The number of new words a child should be given depends, 1st, upon his power to learn new words; 2d, upon your skill in teaching them. A daily test of what a child has done will plainly indicate what he can do. Do not hurry.

2. Have the pupils copy the first word and every successive word taught them. They should copy the same words repeatedly. After a few words have been taught, ten or more, begin with sentences. Have pupils copy the sentences read, and always have them read that which they have copied. In my experience I have found that even their first attempts at copying can generally be read. Very much, however, depends upon the skill of the teacher in writing the words and sentences upon the board and her care in training her pupils to copy.

3. I should not have children in the first grade copy from reading books, but let them copy plainly-written words and sentences from the blackboard. I think the time during the first year might be better spent than in having the children spell orally.

4. Follow Mrs. Parker's exercises as given in the March and June numbers of THE PRACTICAL TEACHER.

5. I should get large sheets of manilla paper, some black crayon or a rubber pencil and make charts. For new blackboards get very heavy manilla paper, buy a pint of blackboard liquid and make your own boards. Train your little pupils to write, draw and mold in clay. Get the clay from the nearest pottery or dig it from the earth.

Little children should recite three or four times a day, and not more than ten minutes at a time.

6. Buy a new first reader and try him with that. Write the first sentence in the reader upon the board and have him copy it. Follow this with other sentences until the boy loves to write and can write well.

7. Keep your temper; do not argue the point with any one until you have shown results. Pray

for sweetness and light and *keep right on*. When you win the children, you will win their parents.

8. When pupils can copy sentences with absolute correctness, have them compose sentences of their own. See language in September and October numbers of THE PRACTICAL TEACHER.

9. Should always have pupils read what they write. If they have written the sentences correctly, they have done all the *spelling* necessary.

10. Try them with a new first reader. If they can read that, then give them two or three more first readers. When they have read these, go on with the second reader. The woods are full of just such superintendents, who, ignorant of the first principles of education, will fight to the death every step of progress. Procure a copy of Horace Mann's seventh annual report, a copy of the attack of Boston masters upon him, and a copy of the present course of study in Boston; present them to your superintendent, and then pray for him.

The people, like children, need object lessons. When they see and feel the force of good results, they will surrender unconditionally.

The spelling book, like all other evil spirits, stands ready to fill vacant places. When little seven-year-old children are trained to write better than their parents, the said parents will hang the spelling book up with the sickle as relics of the past.

"What must I do to organize a kindergarten? What must I have? Where can I obtain the materials? Also a good text-book on the subject?"

First secure the services of a thoroughly trained kindergartener who understands the kindergarten system to the primary. A kindergartener cannot know her own work until she knows its close relations with all other branches and steps in education. She must have a strong, loving sympathy with little children; must be an everlasting, unremitting student of child-life and child-growth. We are now in a very dangerous phase of kindergarten work, which consists in the employment of persons who study the *technique* for a few months and then make a business of kindergartening. There is no art in all the world so difficult or so grand as the care and training of little children. "Fools rush in where angels dare not tread."

Find the woman and you will have a good kindergarten; the best technical work is by Madame Kraus-Boelte, E. Steiger & Co., New York.

I had begun to require my pupils to read more than one set of readers of the same grade before reading THE PRACTICAL TEACHER. I have also required my Grammar grade to read such sketches and stories as "Enoch Arden," "Rip Van Winkle," etc. I have them read one story every two weeks, and then discuss it in the class.

Now, my reasons are—1. It furnishes extra reading; 2. It prepares the pupils for a better appreciation of grammar and rhetoric; 3. It will beget within them a love for reading.

The plan was giving admirable results till the dear people, my patrons and others not my patrons, have concluded I am introducing "novel reading" into my school, and they object, stubbornly object, to my furthering my new designs. The dear people strongly oppose novels; but they hardly know a novel from a treatise on astronomy.

I believe you will favor my commending; and I shall esteem it a favor if you will suggest, either by letter or through your paper, how I may proceed. Shall I try to better the children or give them over to the prejudiced views of their parents?

Call the parents and objectors together and have them decide upon a list of books. Perhaps they may not object to John Bunyan, Robinson Crusoe, Swiss Family Robinson, Water Babies, Boys of '76, and they may be willing to add a few histories. Have the good people form a committee to decide; this might lead them to read more themselves. Centuries of bad teaching have produced fixed results that cannot be overcome in a moment.

The following is an unsigned circular that finds its way to us.

THE SPELLING BOOK. SHALL WE DISCARD IT?

A half-truth is more dangerous than an utter falsehood. Heresies, whether in religion or in education, owe their currency, not to the falsehoods they contain, but to the truth with which they are flavored. Many men, who would be disgusted with an untruth, will readily swallow a half-truth.

It has been known for a long time that children in their first year at school learn to read and spell better from their primer or reading book than from the spelling book. From this half-truth has sprung the heresy that the spelling book is useless, and that the readers are amply sufficient for spelling as well as for their avowed purposes.

Let us examine this claim.

1. It will be granted that children at school should learn to spell correctly all the words which they are likely to use familiarly when they grow up.

2. It will also be granted that at least half of the children who attend public schools never advance beyond the third reader.

3. It follows that, if the spelling book is to be discarded, the first, second and third readers should contain all the common words which people of ordinary but limited education may be expected to hear and have occasion to use.

4. Before examining this point critically let us note another fallacy: the spelling book contains very many uncommon words; the readers contain only common words; therefore, it is argued, the readers should be used to the exclusion of the spelling book. To make this argument valid it is necessary to assume that the readers contain all the common words that are necessary. This is

the claim which we propose to put to the test, and to disprove.

5. The writer selected for examination the first, second and third readers of one of the newest, most improved and most approved series in the market. The name is not given, because the purpose is not to make an argument against readers, but in favor of the spelling book. It is quite certain that the same conclusion would have followed had any other series been taken.

6. All the words occurring in these readers were marked in a small dictionary; the unmarked words therefore were those not contained in the readers. In the first twenty-six pages of the dictionary the following common words are found unmarked—*ability, aboard, abolish, abound, abundant, abroad, absolute, abstain, abstinence, absurd, abuse, academy, accent, accessible, acceptable, accommodate, accompany, accomplish, accurate, accustom, acid, acknowledge, actually, acquaintance, actor, acre, across, acute, adapt, addition, address, adhere, adjacent, adjective, adjoin, adjourn, adjust, admire, admirable, admission, admonish, adopt, adorn, advantage, affable, affect, affirm, affront, afresh, agent, aggravate, aggressor, agreeable, ague, aid, aisle, ail, alarm, album, alcohol, allay, allege, allegiance, alley, allure, ally, alliance, almanac, almonds, alms, altar, alter, almighty, alum, ambition, amend, amiable, amidst, among, amount, amiss, anchor, anecdote, angle, animate, ankle, announce annoy, annual, anoint, anticipate, apology, apparel, appeal, appease, applaud, apply, approach, approve, arbor, arch, argue, arouse, arrears, arrest, arrive, ascend, ascribe, asleep, assail, assault, assemble, assent, assert, assist, associate, atone, attain, attire, attorney, attract, auction, author, avarice, average.*

7. This dictionary contains 520 pages, and, if the same proportion continues throughout, we have 2,500 not uncommon words which it is desirable for children to know, and which they cannot learn from the readers. A large deduction may be made from the words given above, on the ground that they are not all absolutely necessary, and yet enough will remain to prove that the reading books are not of themselves sufficient.

8. It must also be kept in mind that all the words that children learn to spell from the reading books are learned separately. The words have no relation to each other so far as spelling goes. There is no classification, and each separate word requires a distinct effort of memory. But in a spelling book the analogies of the language are kept in view, and when a child has learned to spell one word of a class, he has learned the whole class, as *arm, farm, harm, charm, warm.* It is true that the spelling of many English words is irregular, but still the analogies far exceed the anomalies; and by using the reading books exclusively the analogies are not perceived.

9 It still remains to inquire whether the spelling book contains a better supply than the readers, of that class of words in which the readers are deficient. Are the common words not found in the one to be discovered in the other? For the purpose of making the comparison, one of the smallest of "Primary Spellers" has been selected, a book in large type and wide columns, and containing less than one hundred pages—a book that even a dull child can master in two years. This book contains familiar words not to be found in the three reading books examined, among which are the following: *Husband, forehead, skull, nostril, beard, chin, whiskers, palate, waist, liver, stomach, elbow, wrist, knuckle, thigh, heel, muscle, vein, bonnet, scarf, ribbon, shawl, glove, garter, gaiter, stocking, shirt, gown, corset, lime, hinge, latch, panel, joist, lath, sill, sash, plaster, shutter, rafter, ceiling, furnace, cinder, cistern, fuel, coal, charcoal, gas, shelf, hall, rack, parlor, piano, mantel, image, carpet, lounge, cradle, thimble, machine, cushion, spool, china, goblet, broiled, fried, poached, stewed, mutton, venison, pudding, jelly, molasses, soup, coffee, chocolate, cabbage, parsley, onion, lettuce, turnip.*

10. From this it appears that a person whose knowledge of spelling has been confined to the first, second and third readers—and it must be remembered that one-half of the entire school population never get farther—does not command enough of written English for the ordinary demands of life. If a girl, she could not write for a *bonnet*, nor a *scarf*, nor a *shawl*, nor a *ribbon*, nor a *gown*. If a young man, he could not write to his doctor about his *stomach*, nor his *liver*, nor his *elbow*, nor his *wrist*. If he was a housekeeper, he could not write for *fuel*, nor *coal*, nor *charcoal*, nor *gas*. If his house needed repairs, he could not write about the *ceiling*, nor the *window-sash*, nor the *shutters*, nor the *furnace*. If he went to a restaurant he could not write an order for a plate of *soup;* for eggs *fried, poached*, or *scrambled*; for *beef-steak, broiled* or *stewed;* for *mutton*, or for *venison*, for *pudding*, or for *jelly*. He could not write to his grocer for *coffee, chocolate, molasses* or *soup*. If he had to send a written list to market he could not spell correctly either *cabbage, parsley, onions, lettuce*, or *turnips*.

11. It is not uncommon to hear arguments against the use of an article, founded upon the fact that it has been misused. It must be admitted that spelling books have been misused; they have been used as reading books, a purpose to which they are not adapted; too much time has been given to the hard and uncommon words; the inevitable difficulties of English spelling have been thrust upon the pupil at too early a stage; perhaps too much importance has been attached to what is after all but a superficial accomplishment. Still, if spelling is to be taught at all, the spelling book is indispensable. It may not be needed in the first year, but it cannot without injury be entirely excluded, for it is impossible to find in any series of reading books all the words which it is desirable for children to learn to spell.

12. After children leave school their vocabulary increases. They hear many words which they had not met with in their reading, and it is proper that they should be taught before they leave school to spell all the words which they are likely to know or to use afterwards. The spelling book is the only means by which this can be accomplished.

13. A few years ago it was the fashion with theoretical educators to decry the spelling book, but the reaction has set in. Experience has proved that the reading books are not of themselves sufficient. Reformed spelling was talked about for awhile—a remedy worse than the disease; and public opinion is now settling into the conviction that spelling as it exists must be taught successfully only from a good spelling book.

1. This means that children should learn a mass of words that have no meaning to them. Who knows what words will be familiar to them? The embryotic doctor, lawyer, minister scientist, statesman, merchant, author, editor, poet, must be familiar each with a vast number of words in

his own special vocation with which he or she may one day become familiar. According to this Circularist, a principal point in preparation for a profession is to spell the words that may be used! Think of it, editors; and what if fate or a new administration should change your vocation to that of postmaster or statesman, how utterly bereft of words you would be!! Truly they will need very few if a large part of their precious time is spent in learning the forms of unmeaning words. What the child needs is the cultivated power to instantly acquire the form of a word when there is a necessity for its use.

2. The reason of all reasons why the poor innocents should learn something far better than the forms of unknown words.

This is not even a *half-truth*, it is false and stupid. Readers should not be used as spelling books. Children do not love reading books any too well now. But to degrade a reader to the level of a miserable speller is an invention worthy of a Pre-Mannite. Children should be trained to "talk with their pencils" as soon as they enter school, and should so "talk" every day for eight years.

All true teaching evolves thought; there is no true teaching without the evolution of thought. All thought should be expressed both orally and in writing; thought gained in reading, object and oral lessons; thought in botany, zoology, mineralogy, physics and chemistry; thought in geography, history, literature, rhetoric and mathematics; thought about common things and uncommon things; in fact, all evolved thought should be expressed upon paper in correct forms, in spelling, capitals and punctuation. Pupils should be sedulously trained to make correct forms, and never be allowed to make incorrect ones.

3. The next time you write a circular, Mr. Unknown, for the benefit of teachers, please discuss these propositions, and not give your arguments to the entire falsehood that teachers claim the substitution of readers for spelling books.*

4. Thank Heaven that readers do not contain all the uncommon words of the 104,000. Alack the day! they contain far too many now.

5. Your facts are accepted, and they are "whole truths," entirely acceptable and comforting. Do you read German? Yes. Then translate this sentence from Gœthe: "Ich bin ein Todfeind von Wortschällen." You are not another. Ah, no! Thou lovest the dead forms and empty words, and huggest them to thy cold, hard bosom.

*See THE PRACTICAL TEACHER for October, page 27, last paragraph.

In the language of Mrs. Toodles, "They are so handy to have in the house." Learn them, yea, learn the entire 104,000, but in the name of God and humanity, do not force these empty words upon the children. With God's great universe filled with truth and beauty at your hand, "They ask you for bread and you give them a stone." You are making your last stand for ignorance and stupidity, you are barring the doors of countless schoolrooms with that which keeps truth, beauty and goodness from entering in. Strong language, but true! The day is fast coming, Sir Unknown, when a spelling book will be universally looked at with the same feelings we have when a pagan idol is presented. I trust you may live to see the day.

6, 7, 8, 9, 10. Dictionaries are very profitable books—let us have them. If I do not know how to write *soup*, *soap* or *cabbage*, I look in the dictionary. How do you do?

13. "The reaction has set in." Reactions have a way of 'setting in.' One great one set in more than eighteen hundred years ago. Poison reacted upon Socrates, Comenius was despised and abused, because forsooth, he wished to help the children. Reactions followed Froebel and Pestalozzi. The famous 31 reacted upon Horace Mann, but, my friend, "the truth goes marching on" over the bones of the reactors. The spelling book has "come to stay" until teachers learn to teach *and no longer*. If you really believe what you have written you are to be pitied. If you are trying to sell a spelling book——.

"What do you think of written examinations in the first grade?"

If the motive is to find out exactly what you have done in order to help you to do better work I think well of them. If the motive is to "show the children off" and thereby cultivate selfishness they are very bad. Children should be trained to write the first year. Never *prepare* for stated examinations. Prepare to teach and train your pupils in the best possible manner, and let examinations take care of themselves.

BOOKS ON EDUCATION.

The following list is published in compliance with many requests from teachers for advice as to the best books on education. The list comprises nearly all the English works on education and translations now on the market. The classification is made to aid in selecting books. The estimates of value—excellent, ***; good, **; fair, * —are personal, and should not be regarded by any

means as absolutely just, for two reasons: first, they are made from a personal standpoint of excellence; second, some of them have not been studied carefully enough by the writer in order to give an opinion:

SCIENCE OF EDUCATION.

A Manual of Human Culture.* M. A. Garvey. Bell & Daldy, London.

Education as a Science. Bain. D. Appleton & Co. $1.75.

These two books are the only English works that attempt to outline a complete science of education, and although both are helpful, neither can be regarded as anything complete or even satisfactory as a science of education. Garvey draws some excellent conclusions from very few facts—while Bain does not seem to be aware that there is anything better than the average teaching in English schools, which is probably far behind the average work in American schools.

Pedagogics as a System** Rosenkranz. Translated by Anna C. Brackett.

LECTURES AND ESSAYS.

Education.*** Spencer. D. Appleton & Co. $1.25. Paper, 50 cents.

Lectures on the Science and Art of Teaching.*** Joseph Payne. Willard Small, 24 Franklin street, Boston. $2.00. E. L. Kellogg, 21 Park Place, New York. $1.00. Paper, 50c. (Not a full edition.)

Small's full edition, with THE PRACTICAL TEACHER, $2.25.

Tate's Philosophy of Education.*** C. W. Bardeen, Syracuse, N. Y. With THE PRACTICAL TEACHER, $2.00.

Lectures on Teaching.** J. G. Fitch. University Press, Cambridge, England. $1.25.

School Management.** Landon. Willard Small, Boston. With THE PRACTICAL TEACHER, $2.00.

Philosophy of Teaching.* Sands. Harper Bros.

Lectures and Reports on Education.*** Horace Mann. Lee & Shepard, Boston. 2 vols. $5.00.

Universal Education. Mahew's. A. S. Barnes & Co. $1.

Pedagogy.** E. C. Hewitt. Van Antwerp, Bragg & Co., Cincinnati. $1.25.

Methods of Teaching.** Hoose. C. W. Bardeen, Syracuse, N. Y. Very valuable for its quotations. $1.00.

Practical Education.*** (Rare.) Maria Edgeworth.

Principles and Practice of Teaching.*** Johonnot. D. Appleton & Co. Written in the right spirit and full of excellent suggestions. $1.75.

The spirit of Education. Beesau. C. W. Bardeen.

Notes of Talks on Teaching. Reported by Miss Lelia E. Partridge. E. L. Kellogg & Co., N. Y. For obvious reasons the writer does not make an estimate. $1.00.

Education. Geo. Combe. Macmillan & Co., London. $5.

American Education. Mansfield. A. S. Barnes & Co. $1.

Three Lectures on Education. Oppler. Longmans, Green & Co., London. $1.80.

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A VISIT TO GERMAN SCHOOLS.

(Concluded from May Number.)

Notes of a professional tour to inspect some of the Kindergartens, Primary Schools, Public Girls' Schools, and Schools for Technical Instruction in Hamburg, Berlin, Dresden, Weimar, Gotha, and Eisenach, in the Autumn of 1874, with critical discussions of the general principles and practice of Kindergarten and other schemes of elementary education.

BY JOSEPH PAYNE, AUTHOR OF PAYNE'S LECTURES.

former you begin with the top, and work your way downward to the foundation; in the latter you begin with the ground work on which the house stands, and advance upward to the summit."* To the same purpose we find the great teacher Wolf quoting from Tanaquil Faber, an excellent mathematician, a passage in which he comments on the error into which some teachers fall in making their elementary lessons severely scientific and systematic. The natural method dictates to the teacher the fixing of the learner's whole attention on the individual thing—on that which is, the fact—and leaving the co-ordination and classification of facts until these are represented in the mind by accurate ideas. If only a tithe of the labor extended by the teacher in teaching rules were expended in securing the learner's thorough acquisition and appreciation of facts, the results would in the majority of cases be far more satisfactory than they are. According to our notion, indeed, the framing of rules, formulæ, and general propositions is, under the teacher's guidance, to be the work of the learner in the presence of facts that he knows; and therefore in no case (in elementary instruction) is the experience of others (of which ready-made rules are the product) to be allowed to set aside the learner's own personal experience, which afterwards must form the foundation of his mental structure, and must be taken as the base of operations for the teacher

The upshot of these remarks is obvious. It is that the true function of the teacher is to get his pupils to learn—i. e., to know that they cannot know, in any accurate sense of the term, what they do not learn by personal experience; that is, by the working of their own minds, or, in other words, by self-instruction and self-education.† Whatever apparent success a teacher may gain through interference with this principle, operates *pro tanto* against the interests of the learner by diminishing his independent power. This consequence results whenever the teacher does for the learner what he can and ought to do for himself by observing, analyzing, investigating; in a word, thinking for him. The learner, even though a young child, can observe, compare, form and express judgments upon facts, and the teacher's proper function is to stimulate and guide him in the exercise of these powers, but never to supersede them. If, however, these principles are just, it is submitted that teachers, not only in England, but even in Germany, the land of pedagogy, very often neglect or abuse their proper function.

But I have kept the reader a long time waiting for the continuation of my narrative. I will now resume it:

I attended a lesson given in the third class of the girls' school in botany (twelve girls present, of the ages nine or ten). The teacher, a young and interesting person, whom I had already heard in the lower classes of the same school, showed great power as an instructress. Her tact and skill, and (I should think) her knowledge, too, were remarkable for one so young. She had been, I understood, trained in the Seminar, though in that only.

As the lesson was on botany, I looked, but looked in vain, for plants. To my surprise, there was not even a drawing visible. I must suppose that the actual contact with the material itself, or some good representation of it, had taken place in a previous lesson; at all events, there was nothing of the kind here. Still the lesson, as far as it went, was extremely interesting. After a few questions on the root, stem, leaves, etc., of a plant, the teacher called up one child after another to draw on the blackboard every variety of leaf. Without the slightest hesitation or bungling, they drew not only the outline of each leaf, but in some cases venation; then at least a dozen modifications of the edges; then pistils of various forms; and lastly the stem, furnished with leaves of different kinds. The teacher had but to demand, and the product forthwith appeared. Considering the age of the children, the skill even in drawing was very noticeable; there was not one really bad specimen, and I think every child took her share in the work. The teacher, of course, had no book, nor did she appear to need one. She scarcely, however, gave a word of explanation. There was no telling. The work was all

* Diesterweg's *Wegweiser* (new edition, 1873, p. 244), a most valuable work, worth all the books taken together that have ever been written in England on practical teaching.

† Bishop Temple says: "All the best cultivation of a child's mind is obtained by the child's own exertions, and the master's success may be measured by the degree in which he can bring his scholar to make such exertion absolutely without aid." To the same effect Mr. Markby says: "To teach boys how to instruct themselves—that is, after all, the great end of school work."

done by the children themselves. I regretted that I had no further opportunity of witnessing the lessons of this masterly young teacher.

In the sixth class (the lowest but one of the girls' school), I attended a lesson on "History." The children (twenty in number) were only seven or eight years old, and I wished much to hear how they would be taught history. The teacher, Miss Ulrici, whom I have mentioned before, solved the question very easily, by telling them the story of Ulysses, in which she joined on in some way that I did not quite understand, the tale of Orpheus and Eurydice. It was chiefly the latter with which she dealt, and she told it with uninterrupted ease and fluency to a highly appreciative audience. At the close she asked many questions, which were answered in a way which showed that no parts of the story had escaped attention. I wished to hear what the teacher had to say about teaching little children history; so I asked her whether she called those stories "history." Her answer (in which I fully agreed) was that stories of this kind—that is, which excite the imagination and yet have a sort of historical foundation, and bear upon historical names—are the only basis you can lay for history-teaching in the case of such young children. "Better," I inquired, "than even the history of the Fatherland?" "Yes," she replied, "the history of the Fatherland is too difficult." I found, in fact, that in this class there was no bothering of little children with dates, which to them could have no meaning, nor exposition of ready cut and dried judgments (conveyed often in single epithets) of persons about whom the children knew no facts which could warrant the judgment. I am quite persuaded that much of our teaching of history to young children is almost immoral, as involving the systematic implantation of prejudices which take deep root, and often produce very undesirable fruits. Dr. Arnold recommended that children should be taught history much as Miss Ulrici taught it, by means of striking stories, told as stories, with the addition of pictures, which would make the interest more varied.

I attended one lesson in the higher school for girls, given by Professor Köhler's son. It was on the German language, with illustrations from the writings of Schiller. Schiller's life was briefly sketched by the teacher, who soon began to question the students on the "Lay of the Bell"; the subject of which was entered into, and especially the measures in which it was written. Some of the girls marked on the blackboard the typical trochaic and iambic feet, and a few of the variations from the type. Then questions were asked on the composition and on the nature of sentences. These were followed by the recitation of some short passages from the poem, which were given without much expression. This lesson seemed to me on the whole very good, but not masterly. The students were all exceedingly attentive.

In the programme of studies in this institution, I did not find hygiene mentioned. It would, however, I venture to think, be well to add it, if for no other purpose than that of calling attention to the laws of ventilation. Not here only, but very generally in the school rooms of Berlin, Dresden and Weimar, I really suffered from the oppressiveness of the air. In no one of them did I observe any system of ventilation whatever. The usual plan seems to be this: first, to shut all the windows and doors quite fast, so as to keep out every breath of fresh air; to go on enduring the accumulated misery naturally arising from this arrangement until it is quite intolerable; then to open the windows for about three minutes, and when these have expired, to go on again as before. I was, and still am, at a loss to understand the remarkable objection to fresh air that Germans almost universally manifest, but I am sure it acts injuriously on the school children; and I could not help noticing how much fresher and healthier the children of the kindergartens (in which the air-excluding tendency is rarely shown) generally looked than those of the schools. These remarks have, of course, no application to the case of the girls' Gewerbeschule of Hamburg, where (as I have already remarked) the arrangements for ventilation are most elaborate and complete.

In spite, however, of this drawback, I was strongly impressed with the excellent spirit (if not the excellent air) of Professor Köhler's institution. All the members of it, as far as I could judge, teachers, students, and children, seemed in a healthy mental condition. All were busy, earnest, and advancing, and testified in various ways to the powerful influence of the presiding genius of the place, ostensibly embodied in the person and character of the Professor, but really in the principles and practice of the great master whom he so ably represents. The benevolent and intellectual spirit of Froebel pervades the place. Here, to a greater extent than anywhere else within my experience, his principles serve as the broad continuous basis of the system of instruction and education; and the results, as far as I could judge of them, do great credit to the system.

VISIT TO EISENACH.

On the 12th of September I found myself in Eisenach, where there is one kindergarten of seventy-six children, admirably conducted by Miss Traberth. This lady, an original pupil of Froebel, was, I believe, a learner in his school at Keilhau, and was trained as a kindergarten governess under his direction. Hers, therefore, may be looked upon as an original kindergarten of the true type. When I entered the room, I found a division of the children (about forty) engaged in a game, in which one, who was blindfolded, was attempting to ascertain, by feeling the dress and features, who the child was to whom she had been led up. When she succeeded, which was not always the case, great joy was manifested by the rest.

Another division was engaged in *Netzzeichnen* —drawing doors, pumps, chests of drawers, etc., very neatly. One little girl, whose drawing was incorrect, when the fault was very kindly pointed out, cried. This was the first tear I had seen shed in a kindergarten. The soothing words of the teacher, however, speedily dissipated the clouds, and sunshine appeared again.

The rest of the exercises were such as I had frequently seen before. They were well performed in an earnest manner; and indeed everything was well done in this kindergarten, under the direction of the very kind and intelligent Miss Traberth, who was assisted by two young teachers.

In the course of this day I looked in at the Seminar, or normal school for elementary schoolmasters, the arrangements of which seemed very complete. There was a practicing school in the same building. I just entered three of the classes, each consisting of about seventy boys and girls, evidently very poor, many of them without shoes and stocking. The rooms were very close and stuffy, and as a consequence (so at least it appeared to me), there was less interest and earnestness both in teacher and children than I had witnessed in some other institutions. The teacher in each case was a young man. I did not stay during the lessons, for the atmosphere oppressed me.

I next proceeded to the Bürgersschule (No. 2), where I found in the class I entered sixty-four girls (ages six and seven). The teacher (a man) was giving them a lesson on birds. They all looked much interested, and answered the questions he put eagerly and well. They seemed familiar with the birds named, and gave particulars of their appearances, habits, etc. There were, however, neither birds nor pictures then in view.

In another class (of about seventy children, of nine or ten years of age) the teacher was giving lesson on the geography of Germany, a noble map of which was before the learners. He was asking the names and position of places, and tracing (or rather asking them to trace) the courses of the rivers. He occasionally drew pictures of the rivers on the blackboard, and asked what towns were placed at the points he indicated. Neither he nor the children had any book. They answered his questions promptly and well, especially when the state of the atmosphere was considered. I believe if I had stayed very long in it myself I should have forgotten even the course of the Thames.

My purpose was now accomplished. Next morning I set off for my journey homewards by way of Frankfort, Cologne, and Ostend.

CONCLUSION.

In the foregoing pages I have described what I saw, and only what I saw; but in order to make my account more complete, I will add a few particulars relating to kindergarten and elementary school teaching, and this especially because people who talk on our platforms, and even in official reports, of promoting popular education, frequently seem as if they were unaware that something very different from what they are talking about exists out of England. They talk as if they had never reached the conception of education as development and culture, and had derived all their knowledge of it from what they see going on in our primary schools, where there is —with very rare exceptions—neither development nor culture in any true sense of the term.* It is, therefore, important to show—though I have already, in fact, shown it—that it is possible not

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* If this and other remarks I have made on our revised code system appear too sweeping, I must take refuge under Dr. Morell's apologetic report for 1873 (recently published), in which he thus sums up the "general result" of its working, which is: "That all those elementary acquirements which are of a mechanical character, or which depend upon definite mental exercises rather than reflection (such as writing, elementary arithmetic, spelling, and the power of recognizing words), are on the average *well taught;* but that those acquirements which depend upon thought, sentiment, reflection, or research (such as reading with expression, arithmetical problems, geography, history, literature, and so forth), take a very low and exceptional place in our present school system." In this passage he seems to consider that "to develop the intellect, to cultivate the imagination, to inform the understanding, to elevate both the æsthetic taste and the moral feelings," is to present an "ideal standard" the attainment of which is quite out of the question.

Comment on these quotations is needless. They prove the position I have assumed, and show that our primary education secures neither development nor culture. It is a system of education which leaves out the very essentials of true education.

only to form a theory of education as culture, but practically to carry it out, so as to embody the theory in action. Now, supposing that I had myself formed no such theory of education, but had merely, as an impartial spectator, looked at the work going on before my eyes in the kindergartens and elementary schools I have visited, I could have evolved the theory from the practice. And first, as to the kindergartens: Observing the little children at their games and occupations, I could come to no other conclusion than that they were by these means developing all their powers—bodily, intellectual and moral—in a manner at once natural and healthy, and that this development was accompanied by pleasure and satisfaction. It involved, therefore, and secured, an all-sided training of the faculties, to which no other name could be given than that of culture. I observed, too, that the culture was self-culture. It consisted in the practical exercise of the children's powers by themselves. They learned to do by doing—by their own doing—not by that of the teacher. It was their own eyes that saw, their own hands that wrought, their own minds that devised, contrived and often invented; and hence the earnest interest which they everywhere displayed. This interest, I saw, was the legitimate previous result of self-exercise, and could have been due to no other cause. No exertions on the part of the teacher, without reference to this cause, could have produced it. She might have exhorted, preached, warned, scolded, explained, told, with no other result than that of exciting vexation and disgust, without the continued self-active co-operation of the learners themselves. The work in which their education consisted was to be their work, not hers; to be done by themselves, not by the teacher.

It was easy to see that the self-action and self-exercise, on the part of the children, constituted personal experience—gained at first hand—and, therefore, their own. It was not the experience of the teacher "communicated" (though such communication is really impossible) to the learner, and superseding his. It consisted rather in countless processes of seeing, hearing, feeling, performed by the children themselves, and registering themselves in their minds as ideas, or in countless actions performed by their own limbs, especially their hands, and forming habits of doing. Now the very conception of ceaseless activity of the senses, mind and limbs, excludes the notion of idleness; and I saw, without surprise, no idleness in the kindergarten. All was busy, healthy, happy life.

I could not in presence of these facts come to any other conclusion than that which was going on before my eyes was, in the strictest sense of the term, education, and that it consisted essentially in self-culture. It was, moreover, in a very definite sense, culture on the part of the teacher—culture of the kind that the gardener bestows on his plants and flowers. These he cultivates according to their nature—a nature which he recognizes in all his treatment. He does not theoretically devise a nature for them, and impose upon this nature conditions of growth to suit his theory. On the contrary, he observes the phenomena which present themselves, assumes these as the laws which are to govern his action, and confines that action to cherishing favorable and warding off unfavorable influences. He elicits the vital force of the plants not by direct action upon them, but by securing the light, air, and warmth which are necessary for their development. *Mutatis mutandis*, the function of the child-cultivator is that of the plant cultivator. Both have to secure growth, and to do this by similar means. In a general way (there certainly were exceptions), I saw the kindergarten governesses satisfying in their practices the demands of this theory of their proper function as child-cultivators.

On the whole, I concluded that the work going on in the kindergarten is a just and natural education, suited to the nature of little children, bringing out healthily and happily the faculties of every side of their being, and laying the basis of culture on their self-activity and personal experience.

Turning to the earliest elementary education of children in the primary schools, I saw much that was in strict accordance with the aforesaid principles. I saw the children of from six to eight years of age earnestly, and, as far as I could judge, happily engaged in their work; and I noticed that this was conspicuously the case in schools in which the Froebelian means and appliances formed part (as they frequently did) of the machinery of instruction; most of all (as at Gotha) where these children had already passed through the kindergarten. I was present at lessons in reading where it was taught (1) separately, either by illustrations on the blackboard, or (2) by means of movable wooden tablets containing separate letters; (3) in connection with writing, every scholar forming the letters on his slate while he uttered their sounds; (4) in connection with the reading primer (*Lesefibel*); and in every case I observed that the powers of the letters, not

their names, were demanded and given by the scholars. In every case, too, the meaning of the separate words, when formed out of the sounds, was required and promptly furnished. I saw in these lessons in reading a recognition of the principle that it is by the actual contact and contest of the learner with facts and realities that power is elicited and trained. The teacher in general told the children nothing but the conventional sound corresponding to the printed or written symbol, which, because it was conventional, they could not discover for themselves. All the rest was the pupils' own work.

I was also present at a lesson in writing given by a first-rate teacher, who required numerous preliminary exercises with the fingers, wrist, hand and arm, all of them illustrating the principle of personal experience, and preparing the children to do by knowing what they had to do, and how to set about it.

I heard a lesson in one of these elementary classes on a picture, and observed the intense interest excited by it, and noticed further that the real personal experiences of the children, brought to consciousness by the handling of the teacher, furnished them with the power to interpret the various features of the picture.

In another very interesting lesson, initiating the study of geography (described page 73), I observed an illustration of the principle of proceeding from the near to the more remote in ever-enlarging concentric circles, one horizon of knowledge succeeding another in the exact order of nature. Here, too, the personal observation of the children, their own life's experience, was the basis of the instruction.

Lastly, at Gotha, I was present at a truly remarkable lesson in elementary botany (see p. 108), in which little girls of nine or ten years of age showed by their apt drawing of leaves, etc., on the blackboard, a singularly accurate knowledge of natural forms. Here, too (if I may presume, and I hope I may, that the knowledge thus reproduced was gained by observation of the objects themselves), was a striking evidence that clear notions come not from the telling of the teacher, but from the contact of the learner's own mind with the realities of nature and life.

Without referring to other instances, these furnished me with materials for the induction, that the elementary teaching in German primary schools is characterized by its demand on the self-exercise of the learner's own powers; that, as a rule, it does not stupefy the learner by wordy explanations (often requiring explanation themselves), or weaken his faculties by doing for him what he can and ought to do himself; that it is, in fact, a practical gymnastic for the mind, recognizing the important principle, that as the dancing-master, for instance, does not get his pupils to learn the art by dancing himself, but by making them dance, so the teacher—that is, the director of the mind—must gain his end not by doing the pupil's thinking for him (which, however, is impossible, though often fondly attempted), but by making him think and act for himself. I do not say, for I do not believe, this theoretical aim was always so strictly kept in view by the teachers as it might have been, but considering the disadvantages under which, in many cases, both teachers and children worked, the large classes often containing seventy or eighty pupils, and the stifling, unoxygenized atmosphere of the school-rooms, I was often surprised at the earnest interest and the intellectual activity which pervaded the system. The ultimate conclusion, therefore, to which I arrived with respect to the German elementary classes (I only speak of them in the primary schools), was that, as a rule, development and culture were aimed at and secured; and this conclusion was based on the fact (1) that the children very generally did the work themselves, without the telling of the teacher; (2) that their order and attention testified to the interest excited by the lesson; (3) that the firm and accurate performance of the correct lesson (with scarcely even a blunder) evinced the mastery of the previous lesson; (4) the reading, writing and arithmetic were taught on intellectual principles, which required observation and thought, and maintained the co-operation of the learner's with the teacher's rule; (5) that book instruction was subordinated to practical exercises on the blackboard; (6) that the teacher taught, and did not merely order the children to learn.

In these facts I saw evidences of development and culture, that is of education, though my observation was confined to the case of very little children. I do not indorse every practice carried on in these schools, nor believe that in all cases the most was made of the materials, but that the "ideal standard" of our schools is the real standard of German elementary schools I have no doubt whatever.

As regards external arrangements, there are two points to which my attention was forcibly drawn. In the first place, *every German elementary teacher has a separate class-room.* By this means the dis-

traction arising from a juxtaposition of several classes under different teachers in the same room is absolutely excluded. The teacher is "monarch of all he surveys," and is therefore invested with complete responsibility for all that goes on under his administration. The well being of his little realm lies entirely in his own hands, and he must himself concert the measures necessary for securing it. In the second place, *there are no pupil-teachers in the German primary schools.* Teachers being recognized as a psychological art—the result or practical outcome of a thorough training in principles—it is justly presumed that crude children, entirely ignorant of such principles, unformed in character, and for the most part destitute of well-digested knowledge, are entirely unfitted for the important business of teaching others. The contrary assumption involves indeed a direct denial of the existence of a science and art of education, and strikes at the root of any radical improvement in it.

I am fully aware that we have in England many even that are considered high authorities in matters of education—principals of normal colleges, and others—who strenuously advocate the pupil-teacher system; and one (Dr. Rigg) even goes so far as to recommend its adoption by the German authorities. I am morally certain they will never adopt it. They will, probably, in time (as they ought to do), reduce the number of scholars in the classes, and largely increase the number of teachers, but they will never stultify themselves so far as to supersede the scientific and artistic teaching which now generally prevails, by sanctioning that which, in the nature of things, can be neither scientific nor artistic. They value education too much to endanger its interests by such experiments.

The pupil-teacher system has been advocated on the ground of its economy. The argument is, however, futile. That is truly economical which gains its ends by the best means; and if it should turn out on investigation (and such an investigation must, before long, be authoritatively made) that much of the acknowledged failure in our own primary instruction is due to the extensive employment of pupil-teachers, the argument founded on economy will fall to the ground. If the object is not gained, it is foolish to boast of the means by which it ought to have been gained. If instead of deploring the results of our teaching, and complaining of them (as the Government Report does every year) as "unsatisfactory," we could point to them with pride as successful, and challenge criticism upon them, the case would be very different. It might then be said with some show of plausibility that the end justifies the means; but who that knows what the average teaching in our schools is will urge this plea? Our system stands condemned by its theory (if it can be said to have any); it is condemned by its practice, and even more condemned by its unsatisfactory results; and I venture to express my individual opinion that much (I cannot, of course, say how much) of the failure is due to the extensive employment of pupil-teachers. Nor can there be much doubt that a well trained single teacher will hold in hand and pervade by his influence a class of even fifty children, so as to touch the springs of intellectual action in them more effectually than would be done by the same teacher taking only thirty pupils, and handing over in sets of ten each to two pupil-teachers the rest of the fifty. I think it highly desirable that the very large classes of the German schools should be reduced by nearly half; but judging by my own observation, I should say that, although working under great disadvantages, the German elementary teachers succeed in awakening and maintaining in the children an amount of interest and intellectual life, which, taken in the aggregate, has rarely been equaled even in our own best schools when the same number of children were distributed and disposed of among ordinary pupil-teachers. Take reading as an instance. Who does not know the weary plodding of the little children, "with weary steps and slow," and the stumbling-blocks and intricacies of their early lessons, tripping up continually against the former, and bewildered by the latter; unused to help themselves, and therefore regularly waiting for help from without? and not in vain, for the pupil-teacher, or some member of the class, seeing the need, comes to the rescue with just so much aid as lifts the traveler over the stumbling block, or throws a momentary gleam of light over the fog which surrounds him, but leaves him just as unable to deal with the next difficulty, or to penetrate the darkness himself, as before. The untaught and inexperienced young teacher does not know (how can he know?) that the "telling," which constitutes his sole resource, is not teaching at all; that true teaching ever aims at increasing the pupil's fund of power—not in helping him merely to scramble over the present difficulty, but in making this difficulty the very means of conquest over the next—in helping the child to help himself. I saw no such

"teaching" as this in Germany—not even an approach to it. The methods were various (and I believe in the existence of a better method of teaching reading than any I saw), but they agreed in this: that they called for the exercise of the observing powers of the children, and required their active practical co-operation with the efforts of the teacher, who certainly did not teach as if he thought that his vocation was "telling." There was, too, an orderly sequence in the lessons, and the children seemed to march forward step by step with a sort of aptness and confidence as if relying on themselves, which, even taken alone, in itself showed, to my practiced eye, how the previous lesson had been learnt. I saw nothing of the bewildered, appalled look on being called upon for individual effort which characterizes the learner who is conscious that he is unequal to the occasion, and has his weapons of attack still to seek. I rarely heard a blunder made, and when made, the teacher did not merely "tell" the child the correction, but required him to try again; and the quickened attention in most cases solved the difficulty. But the method itself is the best preservative against blundering If you make a pupil do the work himself—taking "action, action, action!" as your motto, not stupefying him with your "telling," but making him tell—not talking much yourself, but making him talk—not bewildering him with explanations of your own, but requiring his, which must always be the outcome of his knowledge and personal experience,—the result will be that he gains power at every step, and that this power will secure him against much blundering, except that which arises from mere inattention;—and "telling" is certainly no remedy for that. The ordinary child who blunders and stumbles much at his lesson is a witness to the imperfection of his previous training. He does not prove by his blunders any native incompetency on his own part, but he does prove the incompetency of his teacher, who has failed to secure good grounding. As far as this negative argument goes, it is in favor of the German teacher.

One word as to punishment. The best evidence I can give on this point is, that I saw none except the instance mentioned, and there the punishment simply consisted in removing from the offender the means of taking part in the lesson. What, however, might follow when the pencil was restored I had no means of knowing; but this I can say, that I was present at no administration of chastisement of any kind. In the classes there was perfect order, and even on the part of so very small children, continued and undivided attention; often, indeed, an eager unexpressed interest —no noise, no scolding, apparently no taking of marks, therefore no contention or dissatisfaction; and again, no visible implements of punishment—rod, cane, ruler, or tawse. As this is not intended to be a complete—indeed it is a very incomplete—account of German elementary schools, I do not pretend to assert that stringent measures of discipline, without which, some maintain, children cannot be "got past the bitterness of their learning," are not resorted to, or that there is no "torturing hour" which "calls" delinquents "to penance." I simply say that I saw nothing of the kind. My visits, I may add, were never expected. I merely heard the lesson going on, and never, except on one occasion, did I allow of any interruption of the ordinary course of business. I was not, therefore, perhaps, very far wrong in attributing the remarkable order, attention, and interest manifest in all kinds of schools—not merely the elementary—to something inherent in the system of teaching. It is very clear to those who think about the matter and know human nature, that if you require children at school to do only that which they can do themselves, and therefore excite an interest in doing for its own sake, you will rarely need to employ artificial restraints or punishments. I may, indeed, go farther, and maintain, without fear of contradiction, that where the schools are really good—that is, pervaded by the principle just stated—children generally will not require "compulsion" to force attendance at them. If this be true, it goes far to solve the vexed question of compulsory attendance. Make the schools good—that is, suit the teaching to the nature of the children—and attendance, large and regular, will follow as a matter of course. The invariable report of our own inspectors is, that where the schools are good—good in the sense I have just explained—no compulsion is needed; the schools are crowded with scholars. The remarkable experience furnished by the late Dean Dawes's school at King's Somborne is to the same effect, as a case in which the regular attendance was eight-ninths of the number on the rolls, in which the children, sometimes from a distance of three or four miles, in all weathers, flocked joyfully to school, and in which the parents (many of them laborers earning only 9s. a week) made great sacrifices to keep their children where they were so happily and usefully employed in exercising their faculties.*

* See the late Professor Moseley's admirable report (occupying forty pages) on this school in the Blue Book for 1847, which al

All sorts of schemes have been suggested for securing attendance. Why not try the experiment of "good schools"? To carry it out effectually, however, from my point of view, would involve a great revolution. Teachers would have to consider even the relation in which they ought to stand to their pupils. They would have to give up drilling and dragooning children, and try attracting them with learning; to give up the cramming and word-drenching which too generally prevail in our primary schools, and demand self-teaching in their stead; to study more closely than they do the nature of children, and to suit their methods of instruction to it. The normal colleges also would have to share in the revolution. They would have to impregnate students more deeply than they usually do with the fundamental principle that education is culture, and to send them forth not merely masters of the art of "communicating" their own knowledge, but of the higher art of teaching children how to gain knowledge, and with it power, for themselves. This great revolution must commence at headquarters, and one of the first measures for effecting it must be the sweeping away of the revised code into the limbo of oblivion. As long as it lasts, it not merely sanctions, but to a large extent systematically enforces, bad teaching.

I ought to add that much of the excellence of the German elementary teaching is no doubt due to the influence of Pestalozzi's principles. Even where not acknowledged, his spirit pervades the work, and shapes the methods employed. His main principle—that of proceeding from the near, the area of the pupil's own observation and experience, and preparing him by self-exercise for advancing to the more distant and remote; and his secondary principle—that of requiring that the pupil's movement onward shall be made step by step, without a break—are surely recognized in the ordinary teaching of the elementary schools.

Again, Pestalozzi's demand that all instruction should be based on the pupil's own observation (*Anschauung*) of tangible and visible facts and objects, and should therefore be definite and real, subordinating the knowledge of words to the knowledge of things, is, for the most part, satisfied in the practice of the elementary schools.

In fact, ever since the time when numbers of young teachers were sent by different German governments to study Pestalozzi's work at Yverdun, and when also some of the highest authorities in education became convinced, in exercising it, of the soundness of his principles (I mean such men as Schlösser, Gerard, Wilhelm Von Humboldt, Fichte, Von Müller, Schelling, Schacht, Krüger, Plamann, Harnisch, Karl Ritter, Zeller, Denzel, etc.), the ultimate effect was assured. The adoption of Pestalozzi's principles by the governments of Prussia, Saxony, Baden, Würtemberg, etc., has only been a matter of time, and to their adoption we may fairly ascribe the enlightened teaching, with its excellent results, in the common schools of Germany. When the different states shall add (as Saxony has done) Froebel's methods to those of Pestalozzi, the arrangements for elementary education will probably be as complete as it is possible for ordinary human ingenuity to make them.

who wish to know what a "good" elementary school is ought carefully to study.

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